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AN 16-45-121

HANDBOOK
OPERATING INSTRUCTIONS

RADIO SET
ARC TYPE 12

(AIRCRAFT RADIO CORP.)

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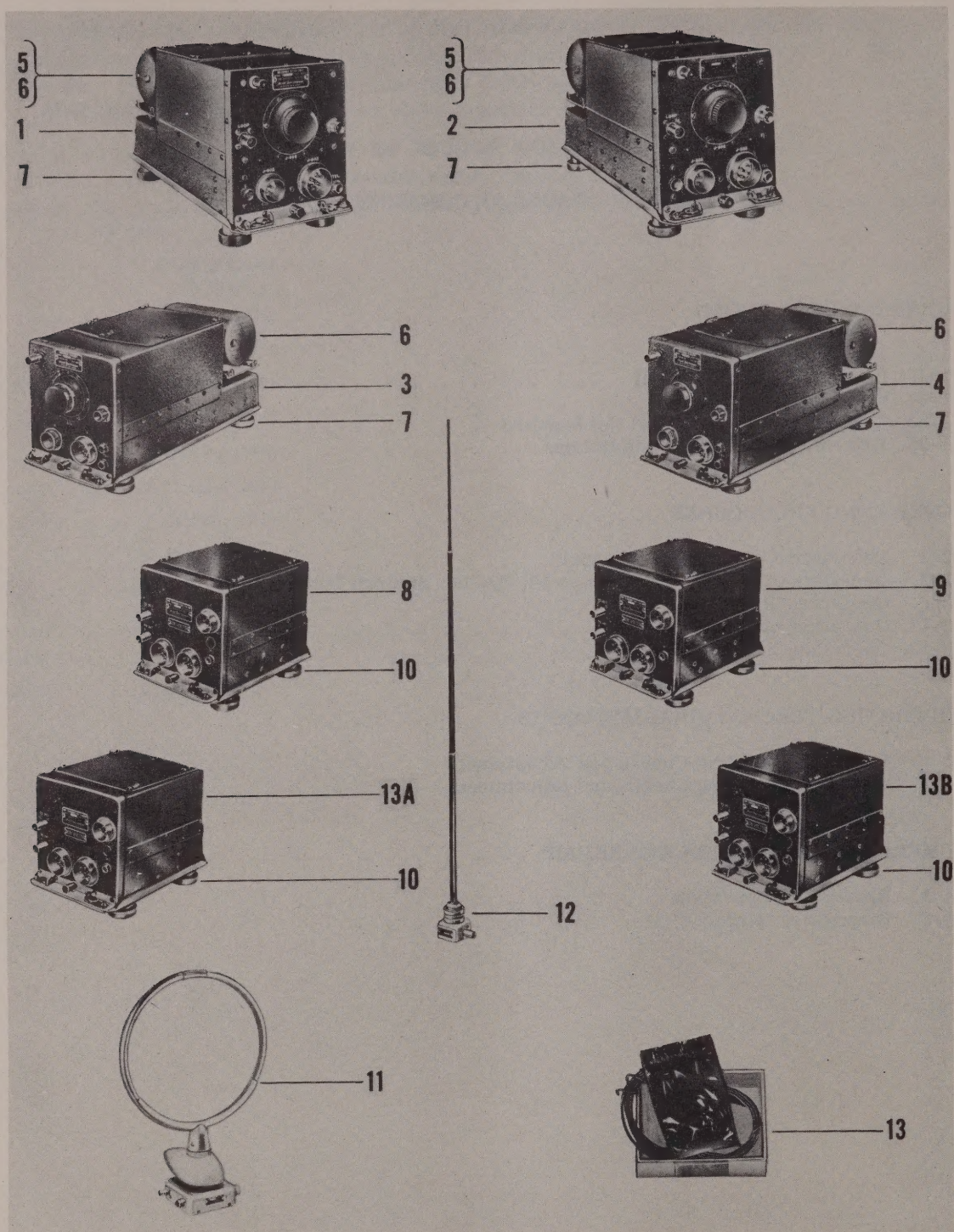
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TABLE OF CONTENTS

Section	Page
I GENERAL DESCRIPTION	1
1-1. Purpose of Equipment	1
1-4. Description of Equipment	1
1-31. Components Supplied	4
1-33. Components Required But Not Supplied	4
1-35. Extreme Temperature Limitations	4
II OPERATING PROCEDURES	8
2-1. Description of Operating Controls	8
2-3. Operation of Radio Set ARC Type 12, Typical Aircraft Installation	15
2-6. Operation, Preflight.	16
2-11. Operation, Airborne.	19
2-19. Operation, Secure	20
III OPERATING CHECKS AND ADJUSTMENTS	22
3-1. Preflight Operating Checks and Adjustments	22
3-3. Airborne Operating Checks and Adjustments	22
IV EMERGENCY OPERATION AND REPAIR	22
4-1. Emergency Operation	22
4-3. Emergency Repair	22

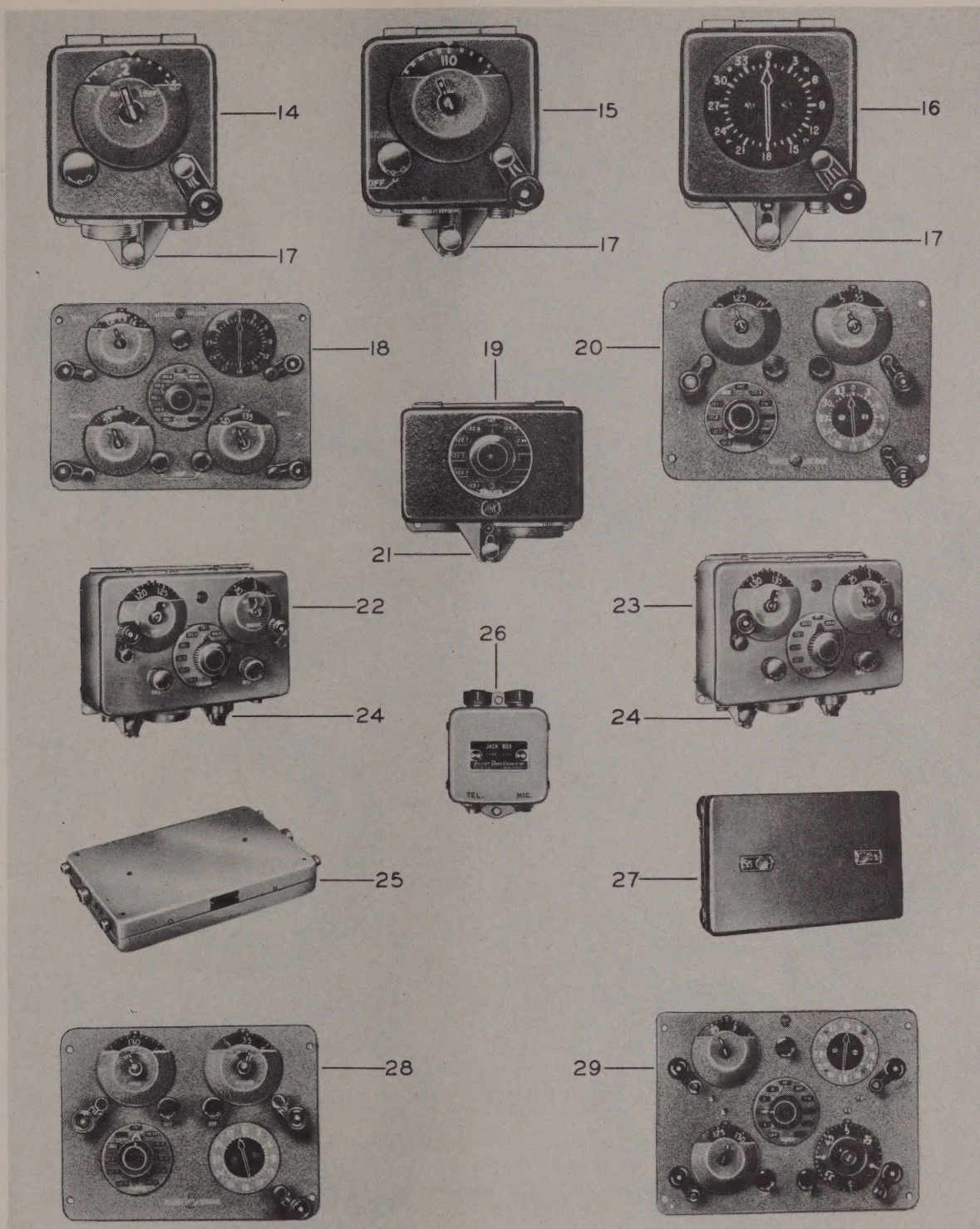


1. Radio Receiver ARC Type R-10A
2. Radio Receiver ARC Type R-11A
3. Radio Receiver ARC Type R-15
4. Radio Receiver ARC Type R-19
5. Dynamotor ARC Type D-10*
6. Dynamotor ARC Type D-10A
7. Mounting ARC Type M-12A
8. Radio Transmitter ARC Type T-11A

9. Radio Transmitter ARC Type T-13
10. Mounting ARC Type M-11A
11. Loop Antenna ARC Type L-10
12. Antenna ARC Type A-12
13. Antenna Kit ARC-12296
- 13A. Radio Transmitter ARC Type T-11B
- 13B. Radio Transmitter ARC Type T-13A

* Refer to Note, paragraph 1-19.

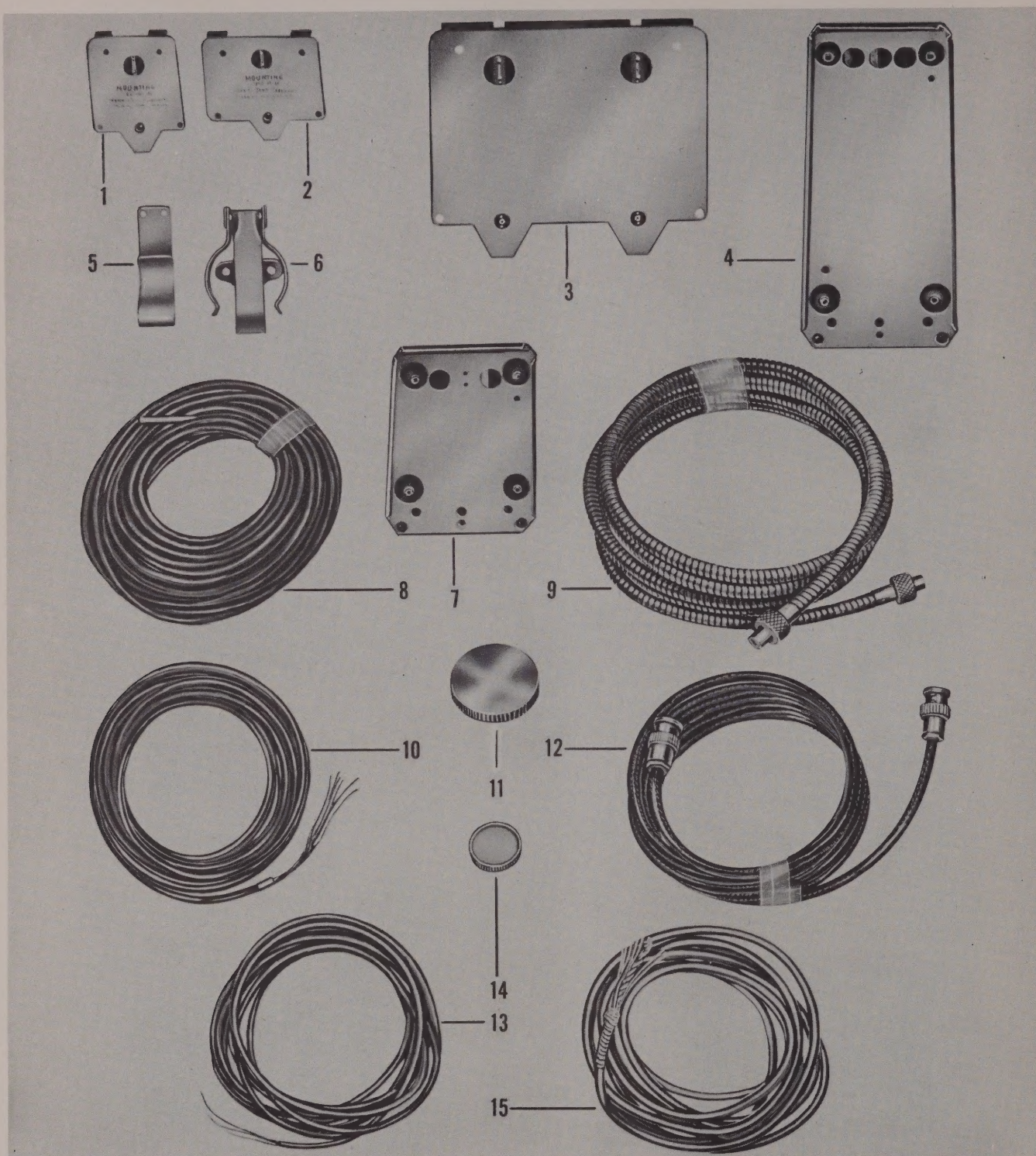
Figure 1-1. Radio Set ARC Type 12, Major Components (Sheet 1 of 2 Sheets)



- 14. Control Unit ARC Type C-16
- 15. Control Unit ARC Type C-17
- 16. Control Unit ARC Type C-18
- 17. Mounting ARC Type M-18
- 18. Control Unit ARC Type C-24
- 19. Control Unit ARC Type C-25
- 20. Control Unit ARC Type C-36
- 21. Mounting ARC Type M-19

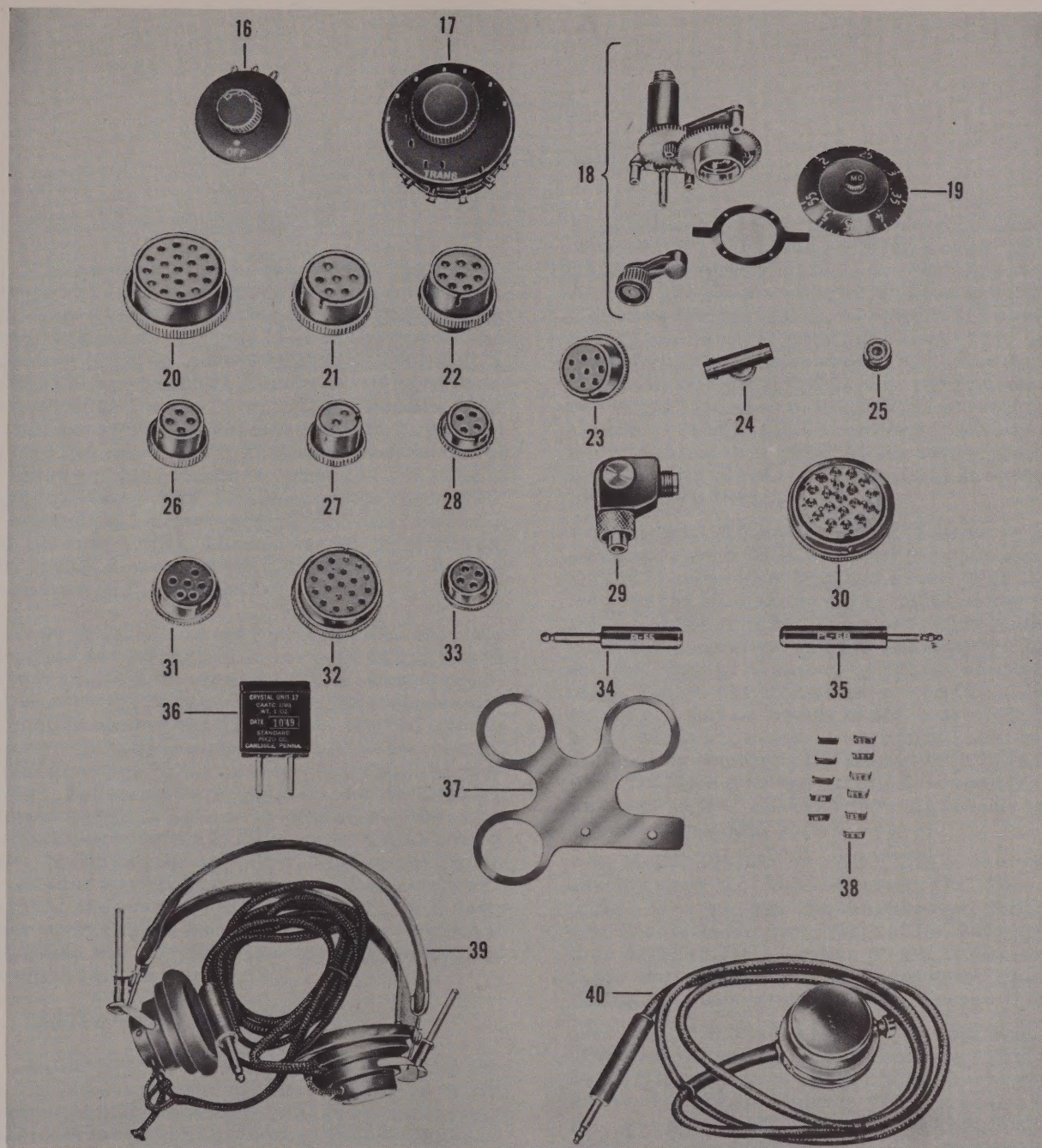
- 22. Control Unit ARC Type C-37
- 23. Control Unit ARC Type C-38
- 24. Mounting ARC Type M-13
- 25. Junction Box ARC Type J-12
- 26. Jack Box ARC Type J-10
- 27. Junction Box ARC Type J-13
- 28. Control Unit ARC Type C-39
- 29. Control Unit ARC Type C-40

Figure 1-1. Radio Set ARC Type 12, Major Components (Sheet 2 of 2 Sheets)



- | | |
|----------------------------|--------------------------------|
| 1. Mounting ARC Type M-18 | 8. Cable ARC-11318 (RG-58/U) |
| 2. Mounting ARC Type M-19 | 9. Mechanical Linkage ARC-6151 |
| 3. Mounting ARC Type M-13 | 10. Cable ARC-11835 |
| 4. Mounting ARC Type M-12A | 11. Cap ARC-14589 |
| 5. Bracket ARC-11938 | 12. Cable Assembly ARC-11369 |
| 6. Bracket ARC-11936 | 13. Cable ARC-11974 |
| 7. Mounting ARC Type M-11A | 14. Cap ARC-9375 |
| 15. Cable ARC-11834 | |

Figure 1-2. Radio Set ARC Type 12, Accessories (Sheet 1 of 2 Sheets)



- | | |
|--|---|
| 16. Control Assembly ARC-14048 | 29. Coupling ARC-6357 |
| 17. Control Assembly ARC-14049 | 30. Connector ARC-12096 |
| 18. Dial Gear Drive Assembly ARC-13976 | 31. Connector ARC-12125 |
| 19. Dial ARC-6051 | 32. Connector ARC-12139 |
| 20. Connector ARC-14320 | 33. Connector ARC-12372 |
| 21. Connector ARC-14051 | 34. Plug ARC-7086 (PL-55) |
| 22. Connector ARC-14050 | 35. Plug ARC-7100 (PL-68) |
| 23. Connector ARC-12098 | 36. Crystal Unit ARC-10714 or ARC-14958 |
| 24. Adapter ARC-14129 | 37. Plate ARC-15392 |
| 25. Connector ARC-11337 (UG-290/U) | 38. Plate Set ARC-14034 |
| 26. Connector ARC-14052 | 39. Headset ARC-11935 |
| 27. Connector ARC-14321 | 40. Microphone ARC-11937 |
| 28. Connector ARC-12375 | |

Figure 1-2. Radio Set ARC Type 12, Accessories (Sheet 2 of 2 Sheets)

SECTION I

GENERAL DESCRIPTION

1-1. PURPOSE OF EQUIPMENT.

1-2. This handbook contains descriptive data and operating procedures for Radio Set ARC Type 12 manufactured by Aircraft Radio Corporation, Boonton, New Jersey. Radio Set ARC Type 12 is the designation assigned to a group of radio components which may be employed to form a variety of communication and navigation systems for use in aircraft. Depending upon the requirements of the airplane installation, the system installed may consist of various combinations of the following components: a broadcast receiver, a range receiver, a VHF receiver, one or more VHF transmitters, a remotely controlled loop antenna, a mast antenna, a wire antenna, one or more control units, and necessary operating accessories. See figures 1-1 and 1-2, and table 1-1.

1-3. Two models of the equipment are available: one is designed for use in aircraft equipped with a 14-volt d-c power source, the other for use in aircraft equipped with a 28-volt d-c power source. Some components are interchangeable, others are not. The nameplates of noninterchangeable components indicate the required operating voltage in parentheses, following the type number. For example: R-10A(14v), and R-10A(28v). Different models of a given component are similar but not interchangeable due to differences in dynamotors, relays, heater wiring, and other details required by the available aircraft power source. Unless indicated otherwise, the information in this handbook will apply to both models of the equipment and all reference to components will disregard the operating voltage as part of the type number.

1-4. DESCRIPTION OF EQUIPMENT.

1-5. RADIO RECEIVER ARC TYPE R-10A. (See figure 1-1, item 1.) Radio Receiver ARC Type R-10A (broadcast) is a six-tube superheterodyne, continuously tunable over the frequency range of 520-1500 kilocycles. This receiver is designed for direction-finding or homing on standard broadcast signals. The R-10A receiver uses a type 14A7 as an r-f amplifier, a 14S7 as a mixer, a 14A7 as a first i-f amplifier, a 14R7 as a second i-f amplifier and avc, a 14F7 as a detector and noise limiter, and a 12A6 as an audio amplifier. A three-section gang capacitor is used to tune the r-f oscillator and two tuned r-f circuits. The r-f oscillator frequency is above the signal frequency. The i-f stage contains six tuned circuits arranged in three pairs at a frequency of 239 kc. The output tube delivers power in excess of 800 milliwatts, working into a nominal load of 300 ohms.

1-6. High-level automatic volume control is provided to prevent receiver over-load. Since it is essential, during direction-finding procedures, to maintain the

signal output at a comfortable level and out of the range of automatic control, the a-f level at which avc takes control is purposely made high. The avc circuit employs the two diode sections of V-504, a type 14R7, one to produce the bias voltage, the other to delay avc action until the a-f level is sufficiently high. This delaying diode also prevents noise bursts from reducing the r-f sensitivity or causing momentary receiver paralysis. One triode section of V-505, a type 14F7 connected as a diode, is used in a noise limiter circuit which permits operation at a considerably higher static level than normally possible and also limits the noise level when tuning between stations.

1-7. An input of 3 amperes at 14 volts dc or 1.5 amperes at 28 volts dc is required for operation. High voltage is supplied by Dynamotor ARC Type D-10A of the required input rating and an output rating of 0.085 ampere at 250 volts dc. The dynamotor mounts on the rear of the receiver chassis making electrical connections through a plug-in connector secured to its base. The R-10A mounts on a Mounting ARC Type M-12A and may be located in any convenient location in the airplane. It has no operating controls but is designed for remote control through the use of a Control Unit ARC Type C-26 (not supplied), or similar component such as the "B'CAST" control assembly included in Control Unit ARC Type C-24.

1-8. RADIO RECEIVER ARC TYPE R-11A. (See figure 1-1, item 2.) Radio Receiver ARC Type R-11A (range) is a six-tube superheterodyne, continuously tunable over the frequency range of 190-550 kilocycles. It is designed for reception of low-frequency radio range stations and for homing or direction-finding. The intermediate frequency is 85 kilocycles.

1-9. Except for the frequency range covered, the intermediate frequency, and certain detail part values, the R-11A receiver is similar to the R-10A receiver. For further details refer to paragraphs 1-5 through 1-7. The R-10A and R-11A receivers may be operated simultaneously with the same wire antenna, such as Antenna Kit ARC-12296, but with a loop antenna such as Loop Antenna ARC Type L-10, only one receiver can be operated efficiently at a given time.

1-10. RADIO RECEIVER ARC TYPE R-15. (See figure 1-1, item 3.) Radio Receiver ARC Type R-15 (VHF) is a nine-tube superheterodyne, continuously tunable over the frequency range of 108-135 megacycles. This receiver is designed for the reception of voice amplitude-modulated signals. The R-15 uses three type 9003 tubes as the first r-f amplifier, a second r-f amplifier, and mixer, followed by a 9002 employed as the r-f oscillator. A 14A7 is used as the first i-f amplifier, a 14R7 as the second i-f amplifier and avc, an additional 14R7 as the third i-f amplifier and avc, and a 14F7 as a detector, noise limiter, and first a-f amplifier. A 12A6 is used as the final ampli-

fier. A four-section gang capacitor is used to tune the r-f oscillator and three r-f tuned circuits. The r-f oscillator frequency is below the signal frequency. The i-f section contains eight tuned circuits arranged in four pairs at a frequency of 15 mc.

1-11. Delayed avc is provided which allows the output to build up to approximately 170 milliwatts before taking hold. The R-15 receiver is designed for operation with Control Unit ARC Type C-17, or similar component. This control unit has a "LO-HI" audio level switch to provide audio level changes of approximately 10 to 1 in power by the introduction of degeneration in the cathode circuit of V-109, the final audio-frequency amplifier. The avc circuit employs the diode sections of V-106 and V-107.

1-12. One triode section of V-108, a type 14F7 is incorporated in a series-diode noise limiter circuit which provides for high attenuation of high-frequency pulses which may interfere with receiver operation.

1-13. An input of 3 amperes at 14 volts dc, or 1.5 amperes at 28 volts dc is required for operation. High voltage is supplied by Dynamotor ARC Type D-10A. The dynamotor mounts on the rear of the receiver chassis and power connections are made through a plug-in connector. When incorporated in a communications system which contains a VHF transmitter, such as Radio Transmitter ARC Type T-11A the dynamotor for the R-15 receiver also supplies high voltage to the transmitter through the use of a relay in Radio Transmitter ARC Type T-11A. The R-15 mounts on an ARC Type M-12A mounting. The receiver contains no available operating controls and therefore may be located in any convenient site in the airplane, and controlled remotely through the use of a C-17 control unit, or similar component.

1-13A. RADIO RECEIVER ARC TYPE R-19. (See figure 1-1, item 4.) Radio Receiver ARC Type R-19 (VHF) is a nine-tube superheterodyne, continuously tunable over the frequency range of 118-148 megacycles. This receiver is designed for the reception of voice-amplitude modulated signals. The intermediate frequency is 15 mc. Except for the frequency range covered and certain detail part values, the R-19 receiver is similar to the R-15 receiver. For further details refer to paragraph 1-10.

1-13B. (Deleted)

1-14. RADIO TRANSMITTERS ARC TYPE T-11A AND T-11B. (See figure 1-1, items 8 and 13A.)

NOTE

Functionally, the T-11A and T-11B transmitters are identical. Electrically, differences occur in the type of vacuum tubes used, certain detail part values and the sidetone circuit. The reference symbol series 201-299 has been assigned to the T-11A and 2301-2399 to the T-11B. The following discussion refers to the detail parts of the T-11A; but, unless otherwise noted, the information supplied is also applicable to the T-11B, requiring only the

substitution of the corresponding 2300-series number to obtain the T-11B reference symbol. For example: For L-202, read L-2302 for T-11B application.

Radio Transmitter ARC Type T-11A is a four-tube, five-channel, crystal-controlled, voice amplitude-modulated transmitter, designed to permit the transmission of voice signals from aircraft to ground in any 2-megacycle band located between 116-132 megacycles. Because of the narrow band, only one set of tuned circuits is required. Four type 6AQ5 vacuum tubes in the T-11A and four type 5763 vacuum tubes in the T-11B serve as crystal oscillator-doubler, amplifier-tripler, power amplifier-doubler, and modulator, respectively.

1-15. The circuit consists of a crystal-controlled Pierce oscillator designed to operate at 1/12 or 1/18 of the output frequency. Depending on the crystal used, the oscillator of the T-11A and the T-11B can operate as a doubler or a tripler at the 1/12 or 1/18 fundamental, respectively. The output of V-201 is tripled in the plate circuit of V-202 and finally doubled in the plate circuit of V-203. V-204, the modulator, acts as an a-f amplifier which plate-modulates the power amplifier at better than 90 percent. The unmodulated carrier output power is better than 2 watts. The microphone feeds into a 1:10 step-up microphone transformer. The modulator tube V-204 feeds into a 1:1.5 step-up transformer which feeds the r-f power amplifier and modulates its output.

1-16. The T-11A transmitter is designed for remote-control frequency selection through the use of a Control Unit ARC Type C-25, or similar component. Setting the selector switch of the control unit to the desired frequency operates a relay which in turn connects the proper crystal into the oscillator circuit. When the selector switch is set to a position "INT." where no crystal is installed, airplane intercommunication is made available through the use of a sidetone circuit. In the T-11A, this sidetone, to the headset line in the associated receiver, such as the R-15, is obtained from the plate of V-204, through a capacitor C-201. The sidetone in the T-11B, however, is obtained from the cathode of V-2304, through a capacitor C-2318.

1-17. Neither the T-11A nor the T-11B contains a permanently connected meter. However, a built-in crystal detector (type 1N34, CR-206 in the T-11A; type 1N34A, CR-2306 in the T-11B), with a-f bypassing, is incorporated in the output circuit and provides a means of checking the tuning and modulation with an external d-c voltmeter.

1-18. An input of 1 ampere at 14 volts dc or 0.5 ampere at 28 volts dc is required for the heaters of the type 6AQ5 vacuum tubes. The requirements for the 5763 heaters are 1.5 amperes at 14 volts dc or 0.75 ampere at 28 volts dc. High voltage for the transmitter is obtained from the receiver dynamotor. The interconnections between the transmitter and receiver are arranged so that when the microphone button is depressed, an SPDT relay K-202 in the transmitter is actuated, switching the high voltage from the receiver to the transmitter. When two transmitters are in-

stalled, the relays K-201 and K-202 at the transmitter not in use serve to patch the power and antenna input connections to the relays of the operating transmitter. The T-11A or the T-11B mount on Mounting ARC Type M-11A and may be located at any convenient place in the airplane.

1-18A. RADIO TRANSMITTERS ARC TYPE T-13 AND T-13A. (See figure 1-1, items 9 and 13B.)

NOTE

Functionally, the T-13 and T-13A transmitters are identical. Electrically, differences occur in the type of vacuum tubes used, certain part values, and the sidetone circuit. The reference symbol series 401-499 has been assigned to the T-13 and 2401-2499 to the T-13A. The following discussion refers to the detail parts of the T-13, but, unless otherwise noted, the informa-

tion supplied is also applicable to the T-13A, requiring only the substitution of the corresponding 2400-series number to obtain the T-13A reference symbols. For example: For L-402, read L-2402 for T-13A application.

Radio Transmitter ARC Type T-13 is a four-tube, five-channel, crystal-controlled, voice amplitude-modulated transmitter designed to permit the transmission of voice signals from aircraft to ground in any 2-megacycle band located between 132 and 148 mc. This frequency range can be extended downward to 125 mc in the T-13 by the addition of a capacity plate, ARC-15392 (see figure 1-2, item 37). In the T-13A, the same extension of range can be achieved using a capacity plate, ARC-15900. Each plate is equipped with sleeves of varying height which fit over the r-f tubes. The plate mounts on the modulation transformer and is secured by two studs, washers, and nuts. Four type 6AQ5 vacuum tubes in the T-13 and four type

5763 vacuum tubes in the T-13A serve as crystal oscillator-doubler, amplifier-tripler, power amplifier-doubler, and modulator, respectively.

1-18B. The circuit consists of a crystal-controlled Pierce oscillator circuit designed to operate at 1/12 or 1/18 of the output frequency. Depending on the crystal used, the T-13 oscillator can operate as a doubler or tripler at the 1/12 or the 1/18 fundamental, respectively. The output of V-401 is tripled in the plate circuit of V-402 and finally doubled in the plate circuit of V-403.

1-18C. High voltage for the T-13 is obtained from the ARC Type D-10A dynamotor mounted on the associated receiver of the system. Except for the frequency range covered, certain detail part values, and other differences noted in paragraphs 1-18A and 1-18B, the T-13 transmitter is similar to the T-11A transmitter, and the T-13B to the T-11B. For further details refer to paragraphs 1-14 through 1-18.

1-19. DYNAMOTOR ARC TYPES D-10 AND D-10A.
(See figure 1-1, items 5 and 6.)

NOTE

The D-10A dynamotor supersedes the D-10 dynamotor, which was supplied with early deliveries of certain receivers. D-10 dynamotors and replacement parts thereof are no longer available from the contractor or manufacturer. When the present stock of D-10 dynamotors is exhausted, replace with D-10A.

The D-10 and D-10A dynamotors are completely enclosed and sealed units designed to furnish high voltage to the individual receivers on which they are mounted, and to the transmitters included in the system. The dynamotors mount by means of snap-slides onto a shock mount which is an integral part of the receiver chassis. Electrical connections are made through a built-in plug connector on the dynamotor base which mates with a connector on the receiver chassis. The D-10 dynamotor has a rated input of 2.8 amperes at 14 volts dc or 1.40 amperes at 28 volts dc, and a rated output of 0.06 ampere at 250 volts dc. The D-10A dynamotor has a rated input of 3.4 amperes at 14 volts dc and 1.7 amperes at 28 volts dc, and a rated output of 0.085 ampere at 250 volts dc.

1-20. LOOP ANTENNA ARC TYPE L-10. (See figure 1-1, item 11.) Loop Antenna ARC Type L-10 is a nine-inch rotatable antenna of 19 microhenries designed for top of bottom mounting on the airplane. It provides for aural direction-finding or homing, and anti-static reception. The L-10 loop is designed for remote control only, through the use of Control Unit ARC Type C-18, or a similar component, which may be located as much as 20 feet away, and which controls rotation of the L-10 from zero to 360 degrees. Ease of rotation is effected through the use of ball bearings and a high-ratio worm-gear drive.

1-21. ANTENNA ARC TYPE A-12. (See figure 1-1, item 12.) Antenna ARC Type A-12 is a 25-inch multi-section, quarter-wave, base-fed antenna, requiring

only a single-hole mounting. The mast section is easily removable by unscrewing it from the base, thus facilitating replacement. The A-12 is designed for use with the R-15 receiver or T-11A transmitter, or similar components. The A-12 antenna is meant for use on aircraft with cruising speeds up to 200 mph and which do not have de-icing equipment. Where all-weather flying is indicated, a type AN-104B Antenna should be substituted. If this antenna is used, an adapter (ARC-11368) is required for connection from the receiver connector to the antenna connector.

1-22. ANTENNA KIT ARC-12296. (See figure 1-1, item 13.) Antenna Kit ARC-12296 is a fixed wire antenna designed for use with the R-10A and R-11A receivers, or similar component. The kit includes copper-clad steel antenna wire, lead-in wire, insulators, a spring, and other fittings normally required for proper installation on the airplane.

1-23. CONTROL UNIT ARC TYPE C-16. (See figure 1-1, item 14.) Control Unit ARC Type C-16 provides for remote control of the R-11A receiver. It includes a switch to select either loop antenna or wire antenna reception. The unit is designed for bulkhead mounting by means of Mounting ARC Type M-18.

1-24. CONTROL UNIT ARC TYPE C-17. (See figure 1-1, item 15.) Control Unit ARC Type C-17 provides for remote control of the R-15 receiver. It includes a switch to select either high or low audio level reception and is designed for bulkhead mounting by means of Mounting ARC Type M-18.

1-25. CONTROL UNIT ARC TYPE C-18. (See figure 1-1, item 16.) Control Unit ARC Type C-18 provides for remote control of the orientation of the L-10 loop antenna. The indication dial is calibrated from zero to 360 degrees. The C-18 is designed for bulkhead mounting by means of Mounting ARC Type M-18.

1-26. CONTROL UNIT ARC TYPE C-24. (See figure 1-1, item 18.) Control Unit ARC Type C-24 is a panel mounting type unit designed for remote control of one R-10A receiver, one R-11A receiver, one R-15 receiver, up to three transmitters, and one L-10 loop antenna. Essentially, it incorporates in one unit the functions of the C-16, C-17, C-18, and C-25 control units, with an added control for the R-10A receiver. The transmitter channels are designated by removable frequency tabs. All electrical and mechanical input and output connections are made through the rear of the enclosure.

1-27. CONTROL UNIT ARC TYPE C-25. (See figure 1-1, item 19.) Control Unit ARC Type C-25 is designed for frequency selection control of one, two, or three transmitters in any combination; for example, two T-11A transmitters and one T-13 transmitter, or a T-11A, T-13, and SCR-619 if this additional transmitter is installed in the aircraft. The C-25 control unit includes a sidetone relay to permit the use of airplane interphone when switched to "INT." position. When switched to the "FM" position, the C-25 functions to disconnect the microphone and key connections from the transmitter(s) and connect them to the appropriate circuits of the SCR-619. Because of the relay, the

C-25 is supplied for either 14-volt d-c or 28-volt d-c operation, depending on the input voltage rating of the equipment with which it is used. Frequency channels are designated by means of removable tabs. This control unit is designed for bulkhead mounting by means of Mounting ARC Type M-19.

1-27A. CONTROL UNIT ARC TYPE C-36. (See figure 1-1, item 20.) Control Unit ARC Type C-36 is designed for remote control of one R-15 receiver, one R-11A receiver, up to three transmitters, and one L-10 loop antenna. A relay is included to permit the connecting of the microphone and key circuits to SCR-619 equipment when the microphone switch is closed and the "TRANS." control set to "FM." Individual tuning cranks and frequency indicating dials are provided for the receivers. The transmitters' frequency selector control is similar to that used in the C-25 control unit. The C-36 is designed for panel mounting. All electrical and mechanical connections are made through the rear of the enclosure.

1-27B. CONTROL UNIT ARC TYPE C-37. (See figure 1-1, item 22.) Control Unit ARC Type C-37 is designed for remote control on one R-11A receiver, one R-19 receiver, one T-11A transmitter, one T-13 transmitter, and another transmitter, such as the SCR-619, or any combination of up to three transmitters. Individual tuning cranks and frequency indicating dials are provided for the receivers. A transmitter frequency selector control similar to the C-25 control unit (refer to paragraph 1-27) is included. The C-37 is available in two models: a 14-volt or a 28-volt.

1-27C. The C-37 control unit is equipped with a relay to disconnect the microphone and key circuits from the transmitters and connect them to the SCR-619 equipment. The transmitters' frequency channels, the interphone connection, and the SCR-619 connection are designated by removable frequency tabs. All electrical and mechanical input and output connections are made through the bottom side of the enclosure. The C-37 is designed for bulkhead mounting by means of Mounting ARC Type M-13.

1-27D. CONTROL UNIT ARC TYPE C-38. (See figure 1-1, item 23.) With one exception, Control Unit ARC Type C-38 is identical with the C-37 control unit. The "VHF" dial is calibrated for use with an R-15 receiver in place of an R-19 receiver. For further details refer to paragraphs 1-27B and 1-27C.

1-27E. CONTROL UNIT ARC TYPE C-39. (See figure 1-1, item 28.) Control Unit ARC Type C-39 is designed for remote control of one R-19 receiver, one R-11A receiver, up to three transmitters, and one L-10 loop antenna. Individual tuning cranks and frequency indicating dials are provided for the receivers. The transmitter frequency selector control is similar to the C-25 control unit (refer to paragraph 1-27). The C-39 is designed for panel mounting. All electrical and mechanical connections are made through the rear of the enclosure.

1-27F. CONTROL UNIT ARC TYPE C-40. (See figure 1-1, item 29.) Control Unit ARC Type C-40 is designed for remote control of one R-19 receiver, one R-11A receiver, one L-10 loop antenna, and components of

Model AN/ARC-5 Aircraft Radio Equipment (not part of Type 12 equipment) and an SCR-619 transmitter (not part of Type 12 equipment) where such equipment is installed in the aircraft. Individual tuning cranks and frequency indicating dials are supplied for the R-19 and R-11A receiver. In addition, a tuning mechanism, supplied without a frequency indicating dial, is incorporated to permit remote-control tuning of the AN/ARC-5 receiver or similar component. The required frequency dial (supplied by the using activity) is attached to the front panel of the control unit. A three-section selector switch is included. This switch simultaneously applies primary power to the transmitter, selects the frequency channel, and connects the appropriate transmitter for the frequency channel selected. All receivers are controlled by individual combined on-off and sensitivity controls. The C-40 control unit is designed for panel mounting. All electrical and mechanical connections are made through the rear of the enclosure.

1-28. JACK BOX ARC TYPE J-10. (See figure 1-1, item 26.) Jack Box ARC Type J-10 provides a microphone input jack and telephone input jack, and also two grommets for connection into and out of the box to a second similar component.

1-29. JUNCTION BOXES ARC TYPE J-12 AND ARC TYPE J-13. (See figure 1-1, items 25 and 27.) Junction Box ARC Type J-12 and Junction Box ARC Type J-13 are potash-dipped aluminum alloy boxes with snap-slide covers. These junction boxes are used to facilitate the cabling of multi-unit systems such as those installed in Models L-17A, L-17B, L-17C, and L-19A aircraft. Two terminal strips provide a total of 32 terminals plus four ground terminals in the J-12, and a total of 30 terminals plus four ground terminals in the J-13. The J-12 has five rubber grommet openings and six threaded outlet openings. The J-13 has nine rubber grommet openings. Both boxes include a sidetone relay and three 20-ampere fuses for protection of the system receivers. Because of the inclusion of the sidetone relay, the junction boxes are available in two models: one for use with a 14-volt d-c source, the other for use with a 28-volt d-c source. The J-12 and J-13 are designed for bulkhead mounting.

1-30. ACCESSORIES. (See figure 1-2.) Accessories include connectors, cables, microphones, headsets, crystal units, and other parts required to supplement the individual airplane installation.

1-31. COMPONENTS SUPPLIED.

1-32. Table 1-1 lists the components required to form the complete equipment and the quantity required per typical airplane installation.

1-33. COMPONENTS REQUIRED BUT NOT SUPPLIED.

1-34. A suitable 14-volt d-c or 28-volt d-c primary power source, depending on the components in use (refer to paragraph 1-4), is required for operation of the equipment. Also, depending on the intended use of the aircraft's communication system, if the required antennas are not supplied with the Type 12 installation they will have to be supplied by the using activity.

1-35. EXTREME TEMPERATURE LIMITATIONS.

TABLE 1-1. COMPONENTS SUPPLIED

Quantity per Installation												Short Form Name	Type Designation
Model H-13B Heli- copter	Model L-15 Aircraft	Models L-17A, L-17B, L-17C Aircraft	Model L-19A Aircraft	Model YH-18 Heli- copter	Model HO5S-1 Heli- copter	Model HRS-1 Heli- copter	Model HOK-1 Heli- copter	Model HTE-1 Heli- copter	Model HTL-4 Heli- copter	Model HTK-1 Heli- copter			
MAJOR COMPONENTS													
---	---	1	---	---	---	---	---	---	---	---	Radio Receiver	ARC Type R-10A(14v)	
---	---	1	---	---	---	---	---	---	---	---	Radio Receiver	ARC Type R-11A(14v)	
1	1	---	1	1	1	1	1	1	1	1	Radio Receiver	ARC Type R-11A(28v)	
---	---	1	---	---	---	---	---	---	---	---	Radio Receiver	ARC Type R-15(14v)	
---	1	---	1*	---	---	---	---	---	---	---	Radio Receiver	ARC Type R-15(28v)	
---	---	---	1*	---	1	1	1	1	1	1	Radio Receiver	ARC Type R-19(28v)	
---	---	2	---	---	---	---	---	---	---	---	Radio Transmitter	ARC Type T-11A(14v)	
2	2	---	1	2	---	---	---	1	1	1	Radio Transmitter	ARC Type T-11A(28v) or T-11B(28v)**	
---	---	---	1	---	---	---	---	1	1	1	Radio Transmitter	ARC Type T-13(28v) or T-13A(28v)**	
---	---	3	---	---	---	---	---	---	---	---	Dynamotor	+ARC Type D-10(14v) +ARC Type D-10(28v)	
1	2	---	1	2	---	2	2	2	2	2	Dynamotor	ARC Type D-10A(28v)	
---	---	1	---	1	---	1	1	1	1	1	Loop Antenna	ARC Type L-10	
1	1	1	1	1	---	---	1	1	1	1	Antenna	ARC Type A-12	
---	---	1	1	---	---	---	---	1	---	---	Antenna Kit	ARC-12296	
---	1	---	---	---	---	---	---	---	---	---	Control Unit	ARC Type C-16	
---	1	---	---	---	---	---	---	---	---	---	Control Unit	ARC Type C-17	
---	1	---	---	---	---	---	---	---	---	---	Control Unit	ARC Type C-18	
---	---	1	---	---	---	---	---	---	---	---	Control Unit	ARC Type C-24	
---	1	---	---	---	---	---	---	---	---	---	Control Unit	ARC Type C-25(28v)	
---	---	---	---	1	---	---	---	---	---	---	Control Unit	ARC Type C-36(28v)	
---	---	---	1*	---	---	---	---	---	---	---	Control Unit	ARC Type C-37(28v)	
---	---	---	1*	---	---	---	---	---	---	---	Control Unit	ARC Type C-38(28v)	
---	---	---	---	---	---	---	---	1	1	1	Control Unit	ARC Type C-39	
---	---	---	---	---	---	1	---	---	---	---	Control Unit	ARC Type C-40(28v)	
---	2	2	2	---	---	---	---	---	---	---	Jack Box	ARC Type J-10	
---	---	1	---	---	---	---	---	---	---	---	Junction Box	ARC Type J-12(14v)	
---	---	---	1	---	---	---	---	1	---	---	Junction Box	ARC Type J-13(28v)	
2	2	2	2	1	---	---	---	2	2	2	Mounting	ARC Type M-11A	
1	2	3	2	1	2	2	2	2	2	2	Mounting	ARC Type M-12A	
---	---	---	1	---	---	---	---	---	---	---	Mounting	ARC Type M-13	
---	3	---	---	---	---	---	---	---	---	---	Mounting	ARC Type M-18	
---	1	---	---	---	---	---	---	---	---	---	Mounting	ARC Type M-19	

* R-15 receiver, with C-38 control unit, and R-19 receiver with C-37 control unit, are alternates in the Model L-19A installation.

** T-11B may be installed as an alternate for T-11A, and T-13A for T-13 in the aircraft listed or in future aircraft installations.

+ Refer to Note, paragraph 1-19.

TABLE 1-1. COMPONENTS SUPPLIED (Cont.)

Quantity per Installation									Short Form Name	Type Designation
Model H-13B Heli-copter	Model L-15 Aircraft	Models L-17A, L-17B, L-17C Aircraft	Model L-19A Aircraft	Model YH-18 Heli-copter	Model HO5S-1 Heli-copter	Model HRS-1 Heli-copter	Model HOK-1 Heli-copter	Model HTE-1 Heli-copter	Model HTL-4 Heli-copter	Model HTK-1 Heli-copter
ACCESSORIES										
1	---	---	---	---	---	---	---	---	---	Dial Gear Drive Assembly ARC-13976
1	---	---	---	---	---	---	---	---	---	Control Assembly ARC-14048
1	---	---	---	---	---	---	---	---	---	Switch Control Assembly ARC-14049
1	1	1	1	1	1	1	1	1	1	Plate Set ARC-14034
1	---	---	1	---	---	---	---	---	---	Dial Assembly ARC-6051
---	---	---	1	---	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (121.5 mc)
---	---	---	1	1	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (121.7 mc)
---	---	---	1	1	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (121.9 mc)
1	1	1	1	1	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (122.1 mc)
1	1	1	---	---	---	---	---	---	---	Crystal Unit ARC-10714 or ARC-14958 (122.3 mc)
1	1	1	1	1	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (122.5 mc)
1	1	1	---	---	---	---	---	---	---	Crystal Unit ARC-10714 or ARC-14958 (122.7 mc)
1	1	1	---	---	---	---	---	---	---	Crystal Unit ARC-10714 or ARC-14958 (122.9 mc)
1	1	1	1	1	---	---	---	---	---	Crystal Unit ARC-10714 or ARC-14958 (126.18 mc)
---	---	---	---	---	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (140.58 mc)
---	---	---	---	---	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (141.12 mc)
---	---	---	---	---	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (142.02 mc)
---	---	---	---	---	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (142.56 mc)
---	---	---	---	---	---	---	---	1	1	Crystal Unit ARC-10714 or ARC-14958 (142.74 mc)
---	1	---	---	---	---	---	---	---	---	Cable Assembly ARC-11369 (26 in.)
---	2	---	---	---	---	---	---	---	---	Cable Assembly ARC-11369 (24 in.)

	1	---	---	---	---	---	---	---	---	Cable Assembly	ARC-11369 (15 in.)
2	---	---	---	---	---	---	---	---	---	Cable Assembly	ARC-11369 (13.5 in.)
---	---	---	---	---	---	---	---	---	---	Cable Assembly	ARC-11369 (variable)
---	---	---	---	---	---	---	---	---	---	Cable	ARC-11318 (RG-58/U) (variable)
---	---	---	---	---	---	---	---	---	---	Cable	ARC-11974 (variable)
---	---	---	---	---	---	---	---	---	---	Cable	ARC-11834 (variable)
---	---	---	---	---	---	---	---	---	---	Cable	ARC-11835 (variable)
1	---	---	---	---	---	---	---	---	---	Mechanical Linkage	ARC-6151 (6 ft 6 in.)
---	---	---	---	---	---	---	---	---	---	Mechanical Linkage	ARC-6151 (14.25 in.)
---	---	---	---	---	---	---	---	---	---	Mechanical Linkage	ARC-6151 (10 ft 1.75 in.)
---	---	---	---	---	---	---	---	---	---	Mechanical Linkage	ARC-6151 (7 ft)
---	---	---	---	---	---	---	---	---	---	Mechanical Linkage	ARC-6151 (variable)
1	---	---	---	---	---	---	---	---	---	Coupling Assembly	ARC-6357
1	---	---	---	---	---	---	---	---	---	Receptacle Cap	ARC-9375
---	---	---	---	---	---	---	---	---	---	Receptacle Cap	ARC-5319
---	---	---	---	---	---	---	---	---	---	Receptacle Cap	ARC-14588
---	---	---	---	---	---	---	---	---	---	Receptacle Cap	ARC-14589
---	---	---	---	---	---	---	---	---	---	Connector	ARC-14320
2	---	---	---	---	---	---	---	---	---	Connector	ARC-14050
4	---	---	---	---	---	---	---	---	---	Connector	ARC-14051
2	---	---	---	---	---	---	---	---	---	Connector	ARC-14052
2	---	---	---	---	---	---	---	---	---	Connector	ARC-14321
---	---	---	---	---	---	---	---	---	---	Connector	ARC-14491
---	---	---	---	---	---	---	---	---	---	Connector	ARC-12096
---	---	---	---	---	---	---	---	---	---	Connector	ARC-12375
---	---	---	---	---	---	---	---	---	---	Connector	ARC-12098
---	---	---	---	---	---	---	---	---	---	Connector	ARC-11337 (UG-88/U)
---	---	---	---	---	---	---	---	---	---	Connector	ARC-12125
---	---	---	---	---	---	---	---	---	---	Connector	ARC-12139
---	---	---	---	---	---	---	---	---	---	Connector	ARC-12372
---	---	---	---	---	---	---	---	---	---	Adapter	ARC-11368 (UG-273/U)
---	---	---	---	---	---	---	---	---	---	Adapter	ARC-14129 (UG-274/U)
---	---	---	---	---	---	---	---	---	---	Headset	ARC-11935
---	---	---	---	---	---	---	---	---	---	Bracket	ARC-11938
2	---	---	---	---	---	---	---	---	---	Microphone	ARC-11937
---	---	---	---	---	---	---	---	---	---	Bracket	ARC-11936
2	---	---	---	---	---	---	---	---	---	Plug, Telephone	ARC-7086
---	---	---	---	---	---	---	---	---	---	Plug, Microphone	ARC-7100

✓ Do not use ARC-14958 with T-11A(14v) transmitters under Serial No. 1001 or T-11A(28v) transmitters under Serial No. 701.

1-36. Normal operation should be obtained under extreme cold weather conditions. Ordinarily under such conditions, insofar as the mechanical linkage is concerned, no lubrication of any sort should be applied to the shafting. However, if lubrication is deemed necessary, use a very light application of clock and watch oil (Specification 2-47-E.)

1-37. Under extreme hot weather operating conditions, precautions should be taken to permit sufficient circulation of air around the equipment. In particular, in the H-13B Helicopter installation, drill a sufficient number of holes, approximately one inch in diameter, on all sides of the container in which the components are installed to permit air to circulate freely.

SECTION II

OPERATING PROCEDURES

2-1. DESCRIPTION OF OPERATING CONTROLS.

2-2. Table 2-1 lists the controls, and their functions, provided for use in actual operation of the components of Radio Set ARC Type 12.

TABLE 2-1. OPERATING CONTROLS

Component	Control	Function
C-16 Control Unit (figure 2-1)	"OFF--SENS"	Combination off-sensitivity switch, controls application of input power to R-11A, rotation clockwise (direction of arrow) turning receiver on. Further clockwise rotation increases the gain sensitivity and is used to adjust the output to operational levels.
	"ANT.--LOOP"	In "ANT." position this switch selects the wire antenna for reception; in "LOOP" position the L-10 loop antenna is selected.
	TUNING CRANK	(This is a reference designation only, referring to the crank handle which is not marked.) Tunes receiver to desired frequency as indicated on associated dial marked "MC."
C-17 Control Unit (figure 2-2)	"OFF--SENS"	Combination off-sensitivity switch controls application of input power to R-15 (and also T-11A, refer to paragraph 1-18), rotation clockwise (direction of arrow) turning receiver on. Further clockwise rotation increases the gain sensitivity and is used to adjust the output to operational levels.
	"VOL"	Selects audio level changes for R-15 receiver of approximately 10 to 1 in power, in "LO" and "HI" positions.
	TUNING CRANK	(This is a reference designation only, referring to the crank handle which is not marked.) Tunes receiver to desired frequency as indicated on associated dial marked "MC."
C-18 Control Unit (figure 2-3)	TUNING CRANK	(This is a reference designation only, referring to the crank handle which is not marked.) Controls azimuth rotation of L-10 loop antenna as indicated on associated dial calibrated from zero to 360 degrees.
C-24 Control Unit (figure 2-4)	"B'CAST"	(Identifies control assembly for R-10A receiver.) In "ANT." position, "ANT.--LOOP" switch selects the wire antenna for reception; in "LOOP" position the L-10 loop antenna is selected.

TABLE 2-1. OPERATING CONTROLS (Cont.)

Component	Control	Function
C-24 Control Unit (figure 2-4) (Cont.)	B' CAST TUNING CRANK	(This is a reference designation referring to the upper left crank handle which is not marked.) Tunes R-10A receiver to desired frequency as indicated on associated dial marked "MC."
	"OFF"	(Refers to top center knob.) Combination off-sensitivity control. Controls application of input power to R-10A, rotation in a clockwise direction (direction of arrow) turning receiver on. Further rotation increases the gain sensitivity of the R-10A and is used to adjust the output to operational levels.
	"LOOP"	(Identifies control assembly for L-10 loop.) Controls azimuth rotation of L-10 loop antenna as indicated on associated dial calibrated from zero to 360 degrees.
	"TRANS."	Selects desired crystal frequency for T-11A transmitter(s) and provides sidetone connection for inter-phone communication when switched to "INT." position.
	"RANGE"	(Identifies control assembly for R-11A receiver.) In "ANT." position, "ANT.--LOOP" switch selects the wire antenna for reception; in "LOOP" position the L-10 loop antenna is selected.
	RANGE TUNING CRANK	(This is a reference designation referring to the lower left crank handle which is not marked.) Tunes R-11A receiver to desired frequency as indicated on associated dial marked "MC."
	"OFF"	(Refers to lower left knob.) Combination off-sensitivity control. Controls application of input power to R-11A, rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the gain sensitivity of the R-11A and is used to adjust the output to operational levels.
	"VHF"	(Identifies control assembly for R-15 receiver.) "LO" position of "LO-HI" switch selects an audio level of approximately 30 milliwatts; in "HI" position, a 300-milliwatt audio level is selected.
	VHF TUNING CRANK	(This is a reference designation referring to the lower right crank handle which is not marked.) Tunes R-15 receiver to desired frequency as indicated on associated dial marked "MC."
C-25 Control Unit (figure 2-5)	"OFF"	(Refers to lower right knob.) Combination off-sensitivity control. Controls application of input power to R-15 and T-11A (refer to paragraph 1-18), rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the gain sensitivity of the R-15 and is used to adjust the output to operational levels.
	"TRANS."	Selects desired crystal frequency for T-11A transmitter(s) and provides sidetone connection for inter-phone communication when switched to "INT." position. When switched to "FM" position, disconnects microphone and key circuits from T-11A transmitters and connects them to appropriate circuits of SCR-619 equipment installed in the Model L-15 communication system.

TABLE 2-1. OPERATING CONTROLS (Cont.)

Component	Control	Function
C-36 Control Unit (figure 2-5A)	"VHF"	(Identifies control assembly for R-15 receiver.) "LO" position of "LO-HI" switch selects an audio level of approximately 30 milliwatts; in "HI" position, a 300-milliwatt audio level is selected.
	VHF TUNING CRANK	(This is a reference designation referring to the upper left crank handle which is not marked.) Tunes R-15 receiver to desired frequency as indicated on associated dial marked "MC."
	"OFF"	(Refers to left knob.) Combination off-sensitivity control. Controls application of input power to R-15 and T-11A transmitter, rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the gain sensitivity of the R-15 audio and is used to adjust the output to operational levels.
	"RANGE"	(Identifies control assembly for R-11A receiver.) In "ANT." position, "ANT.-LOOP" switch selects the wire antenna for reception; in "LOOP" position the L-10 loop antenna is selected.
	"OFF"	(Refers to right knob.) Combination off-sensitivity control. Controls application of input power to R-11A, rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the gain sensitivity of the R-11A and is used to adjust the output to operational levels.
	RANGE TUNING CRANK	(This is a reference designation referring to the upper right crank handle which is not marked.) Tunes R-11A receiver to desired frequency as indicated on associated dial marked "MC."
	"LOOP"	(Identifies control assembly for L-10 loop.) Controls azimuth rotation of L-10 loop antenna as indicated on associated dial calibrated from zero to 360 degrees.
	"TRANS."	Selects desired crystal frequency for T-11A transmitter(s) and provides sidetone connection for interphone communication when switched to "INT." position. When switched to "FM" position, disconnects microphone and key circuits from T-11A transmitters and connects them to appropriate circuits of SCR-619 equipment, when such equipment is installed.
C-37 Control Unit (figure 2-5B)	"VHF"	(Identifies control assembly for R-19 receiver.) "LO" position of "LO-HI" switch selects an audio level of approximately 30 milliwatts; in "HI" position, a 300-milliwatt audio level is selected.
	"RANGE"	(Identifies control assembly for R-11A receiver.) "ANT." switch indicates that wire antenna is to be used for reception. CAUTION Do not disturb the setting of the "ANT." switch unless authorized.

TABLE 2-1. OPERATING CONTROLS (Cont.)

Component	Control	Function
C-37 Control Unit (figure 2-5B) (Cont.)	VHF TUNING CRANK	(This is a reference designation referring to the left crank handle which is not marked.) Tunes R-19 receiver to desired frequency as indicated on "VHF" dial.
	"OFF"	(Refers to left knob.) Combination off-sensitivity; controls application of input power to R-19 receiver, T-11A and T-13 transmitters (refer to paragraphs 1-18 and 1-18A), rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the gain sensitivity of the R-19 and is used to adjust the output to operational levels.
	"TRANS."	Selects desired crystal frequency for T-11A and T-13 transmitters. Provides sidetone connection for inter-phone communication when switched to "INT." position. When switched to "FM" position, disconnects microphone and key circuits from T-11A and T-13 transmitters and connects them to appropriate circuits of SCR-619 equipment installed in the Model L-19A communication system.
	"OFF"	(Refers to right knob.) Combination off-sensitivity control. Controls application of input power to R-11A receiver, rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the gain sensitivity of the R-11A and is used to adjust the output to operational levels.
	RANGE TUNING CRANK	(This is a reference designation referring to the right crank handle which is not marked.) Tunes R-11A receiver to desired frequency as indicated on "RANGE" dial.
C-38 Control Unit (figure 2-5C)	"VHF"	(Identifies control assembly for R-15 receiver.) "LO" position of "LO-HI" switch selects an audio level of approximately 30 milliwatts; in "HI" position, a 300-milliwatt audio level is selected.
	"RANGE"	(Identifies control assembly for R-11A receiver.) "ANT." switch indicates that wire antenna is to be used for reception. CAUTION Do not disturb the setting of the "ANT." switch unless authorized.
	VHF TUNING CRANK	(This is a reference designation referring to the left crank handle which is not marked.) Tunes R-15 receiver to desired frequency as indicated on "VHF" dial.
	"OFF"	(Refers to left knob.) Combination off-sensitivity; controls application of input power to R-15 receiver, T-11A and T-13 transmitters (refer to paragraphs 1-18 and 1-18A), rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the gain sensitivity of the R-15 and is used to adjust the output to operational levels.

TABLE 2-1. OPERATING CONTROLS (Cont.)

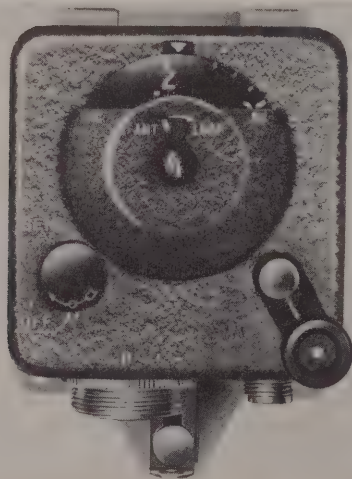
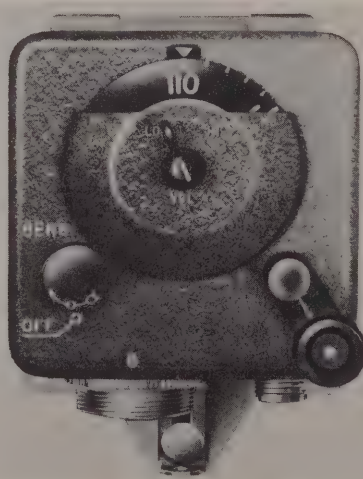
Component	Control	Function
C-38 Control Unit (figure 2-5C) (Cont.)	"TRANS."	Selects desired crystal frequency for T-11A and T-13 transmitters. Provides sidetone connection for inter-phone communication when switched to "INT." position. When switched to "FM" position, disconnects microphone and key circuits from T-11A and T-13 transmitters and connects them to appropriate circuits of SCR-619 equipment installed in the Model L-19A communication system.
	"OFF"	(Refers to right knob.) Combination off-sensitivity control. Controls application of input power to R-11A receiver, rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the gain sensitivity of the R-11A and is used to adjust the output to operation levels.
	RANGE TUNING	(This is a reference designation referring to the right crank handle which is not marked.) Tunes R-11A receiver to desired frequency as indicated on "RANGE" dial.
C-39 Control Unit (figure 2-5D)	"VHF"	(Identifies control assembly for R-19 receiver.) "LO" position of "LO-HI" switch selects an audio level of approximately 30 milliwatts; in "HI" position, a 300-milliwatt audio level is selected.
	VHF TUNING CRANK	(This is a reference designation referring to the upper left crank handle which is not marked.) Tunes R-19 receiver to desired frequency as indicated on associated dial marked "MC."
	"OFF"	(Refers to left knob.) Combination off-sensitivity control. Controls application of input power to R-19 and the installed transmitters, rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the r-f gain sensitivity of the R-19 and is used to adjust the output to operational levels.
	"RANGE"	(Identifies control assembly for R-11A receiver.) In "ANT." position, "ANT.-LOOP" switch selects the wire antenna for reception; in "LOOP" position the L-10 loop antenna is selected.
	"OFF"	(Refers to right knob.) Combination off-sensitivity controls. Controls application of input power to R-11A, rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the r-f gain sensitivity of the R-11A and is used to adjust the output to operational levels.
	RANGE TUNING	(This is a reference designation referring to the upper right crank handle which is not marked.) Tunes R-11A receiver to desired frequency as indicated on associated dial marked "MC."
	LOOP TUNING CRANK	(This is a reference designation referring to the lower right crank handle which is not marked.) Controls azimuth rotation of L-10 loop antenna as indicated on associated dial calibrated from 0 to 360 degrees.

TABLE 2-1. OPERATING CONTROLS (Cont.)

Component	Control	Function
C-39 Control Unit (figure 2-5D) (Cont.)	"TRANS."	Selects desired crystal frequency for installed transmitters and provides sidetone connection for interphone communication when switched to "INT." position. When switched to "FM" position (if such marking is included), disconnects microphone and keying circuits from transmitters and connects them to appropriate circuits of FM transmitter, such as the SCR-619, when such equipment is installed.
C-40 Control Unit (figure 2-5E)	"RANGE"	(Identifies control assembly for R-11A receiver.) In "ANT." position, "ANT.-LOOP" switch selects the wire antenna for reception; in "LOOP" position, the L-10 loop antenna is selected.
	RANGE TUNING CRANK	(This is a reference designation referring to the upper left crank handle which is not marked.) Tunes R-11A receiver to desired frequency as indicated on associated dial marked "MC."
	"OFF"	(Refers to top center knob.) Combination off-sensitivity control. Controls application of input power to R-11A, rotation in a clockwise direction (direction of arrow), turning receiver on. Further rotation increases the r-f gain sensitivity of the R-11A and is used to adjust the output to operational levels.
	LOOP TUNING CRANK	(This is a reference designation referring to the upper right crank handle which is not marked.) Controls azimuth rotation of L-10 loop antenna as indicated on associated dial calibrated from 0 to 360 degrees.
	"TRANS."	Selects transmitting frequency channel and simultaneously applies input power to the transmitter and connects the appropriate transmitter. When switched to "INT" position, provides sidetone connection for interphone operation. Connects FM transmitter (if installed) when switched to "FM" position.
	"VHF"	(Identifies control assembly for R-19 receiver.) "LO" position of "LO-HI" switch selects an audio level of approximately 30 milliwatts; in "HI" position, a 300-milliwatt audio level is selected.
	VHF TUNING CRANK	(This is a reference designation referring to the lower left crank handle which is not marked.) Tunes R-19 receiver to desired frequency as indicated on associated dial marked "MC."
	"OFF"	(Refers to lower left knob.) Combination off-sensitivity control. Controls application of input power to R-19 receiver. Rotation in clockwise direction (direction of arrow) turns receiver on. Further rotation increases the r-f gain sensitivity of the R-19 and is used to adjust the output to operational levels.
	"OFF"	(Refers to lower right knob.) Combination off-sensitivity control. Controls application of input power to optional tunable component installed in aircraft such as AN/ARC-5 receiver. Further rotation in clockwise direction adjusts r-f gain sensitivity of component to operational level.

TABLE 2-1. OPERATING CONTROLS (Cont.)

Component	Control	Function
C-40 Control Unit (figure 2-5E) (Cont.)	TUNING CRANK	(This is a reference designation referring to the lower right crank handle which is not marked.) Controls tuning of optional equipment, such as AN/ARC-5 receivers, which may be installed in aircraft. Tuning position will be indicated on dial, mounted above the crank, which is supplied and installed by the using activity.
Control Assembly ARC-14048 (figure 2-6)	"OFF"	(Installed in Model H-13B Helicopter only.) Combination off-sensitivity control. Controls application of input power to R-11A and T-11A (refer to paragraph 1-18), rotation in a clockwise direction (direction of arrow) turning receiver on. Further rotation increases the gain sensitivity of the R-11A and is used to adjust the output to operational levels.
Switch Control Assembly ARC-14049 (figure 2-6)	"TRANS."	(Installed in Model H-13B Helicopter only.) Selects desired crystal for T-11A transmitters and provides sidetone connection for interphone communication when switched to "INT." position.
Dial Gear Drive Assembly ARC-13976 (figure 2-6)	TUNING CRANK	(Installed in Model H-13B Helicopter only.) (This is a reference designation referring to crank handle which is not marked.) Tunes R-11A receiver to desired frequency as indicated on associated dial marked "MC."

Figure 2-1. Control Unit ARC Type C-16,
Front Panel ViewFigure 2-2. Control Unit ARC Type C-17,
Front Panel View

2-3. OPERATION OF RADIO SET ARC TYPE 12, TYPICAL AIRCRAFT INSTALLATION. (See figure 2-7.)

2-4. COMPONENTS. Major components of Radio Set ARC Type 12 included in a typical aircraft communications system are: one R-10A receiver with a D-10A dynamotor, one R-11A receiver with a D-10A dynamotor, one R-15 receiver with a D-10A dynamotor or R-19 receiver with D-10A dynamotor, one T-11A and one T-13 transmitter (or two T-11A transmitters), one control unit, one L-10 loop antenna, one A-12 mast antenna, one ARC-12296 antenna kit (wire antenna), one J-12 or J-13 junction box, and two J-10 jack boxes. All operating controls are mounted on the control unit. The installation may also include an SCR-619 radio set.

2-5. USE OF EQUIPMENT. This typical ARC Type 12 installation will provide the following functions:

Air-to-ground VHF transmission on (for example) 122.1, 122.3, 122.5, 122.7, and 122.9 mc, by means of the T-11A transmitter, and 126.18 mc, by means of the T-13 transmitter when equipped with capacity plate ARC-15392. (Refer to paragraph 1-18A.) These channels permit aircraft operation on all CAA towers and communication stations, and all military towers.

NOTE

The T-11A can be used for transmission on 126.18 mc if a capacity plate is not available to lower the frequency range of the T-13, or if it is desired to use the T-13 for transmission only within its normal frequency range.

Reception of ground-to-air communication and navigation signals in the frequency range of 190 to 550 kc. This frequency band includes CAA four-course on all ranges, Navy ranges, marine beacons, CAA, Air

Force, and Navy low-frequency tower communications, and the 500-kc distress frequency.

Reception of ground-to-air signals in the frequency range of 520 to 1500 kc. This frequency band includes commercial broadcast stations.

Manual direction-finding facilities using a remote-controlled loop and either of the receiving facilities noted above.

Reception of ground-to-air VHF communications or any channel in the frequency range of 118 to 148 mc. This range includes all CAA and Air Force towers; CAA and Air Force communication stations; CAA, Air Force, and Navy GCA; and the universal emergency frequencies.

Provisions for switching the microphone and key connections for utilization of the SCR-619 equipment, where such equipment is installed.

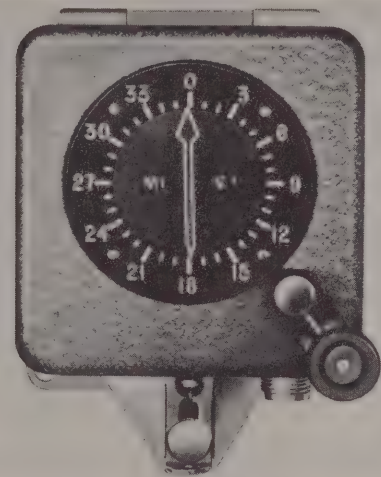


Figure 2-3. Control Unit ARC Type C-18, Front Panel View

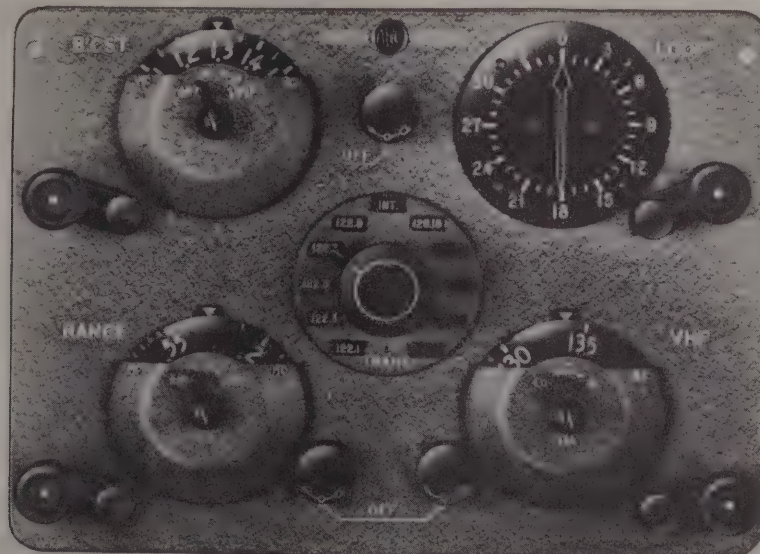


Figure 2-4. Control Unit ARC Type C-24, Front Panel View

Provisions for intercommunication between pilot and observer.

2-6. OPERATION, PREFLIGHT.

2-7. R-10A RECEIVER.

- Set airplane's electrical system "BATTERY" switch to "ON."
- Turn applicable "OFF" control on control unit on, and rotate full clockwise. Allow equipment to warm up for two to three minutes.
- Set "ANT.-LOOP" switch of "B'CAST" control assembly to "ANT."
- Rotate "B'CAST" tuning crank, checking operation and reception of the R-10A receiver over the entire frequency range. Reduce the sensitivity as required with "OFF" control.



Figure 2-5. Control Unit ARC Type C-25, Front Panel View

- Tune the R-10A to a selected station. Set the "B'CAST" "ANT.-LOOP" switch to "LOOP" position.

CAUTION

Check that "RANGE" "ANT.-LOOP" switch is on "ANT." position. Optimum results are achieved when only one receiver is operated on "LOOP."

- Rotate the "LOOP" tuning crank, causing the L-10 loop antenna to rotate, and check reception of two minima signals 180 degrees apart.

- Turn "OFF" control full counterclockwise (off).

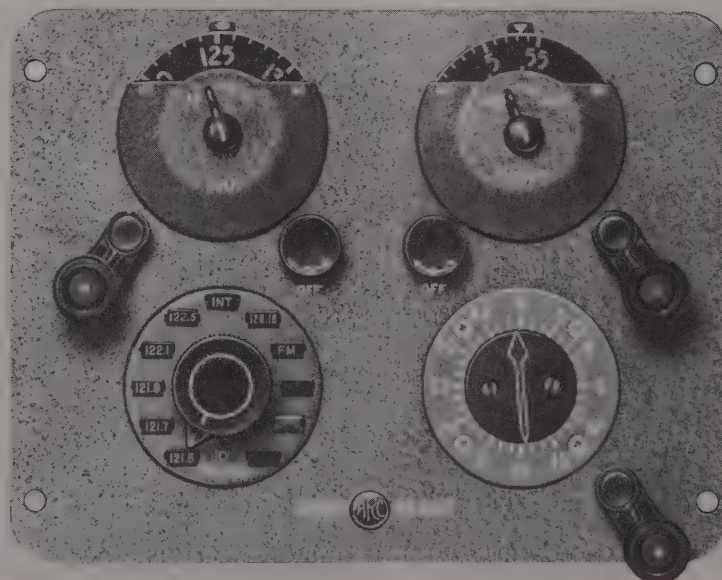
2-8. R-11A RECEIVER. To preflight test the R-11A receiver, use the "RANGE" control assembly and its detail control parts mounted on the control unit and follow the procedure outlined in paragraph 2-7 for the R-10A receiver, making certain that "RANGE" "ANT.-LOOP" switch is on "LOOP" position.

CAUTION

Check that "B'CAST" "ANT.-LOOP" switch is on "ANT." position. Optimum results are achieved when only one receiver is operated on "LOOP."

2-9. R-19 RECEIVER.

- Set airplane's electrical system "BATTERY" switch to "ON."
- Turn "OFF" control of the "VHF" control assembly on the control unit on, and rotate full clockwise. Allow equipment to warm up for two to three minutes.
- Set the "VHF" "LO-HI" switch to "LO."
- Rotate the "VHF" tuning crank and check the reception and operation of the R-19 receiver over the entire frequency range.
- With the "LO-HI" switch in "HI" position, check the operation and reception of the R-19 receiver, reducing the sensitivity gain as required with the lower right "OFF" control.



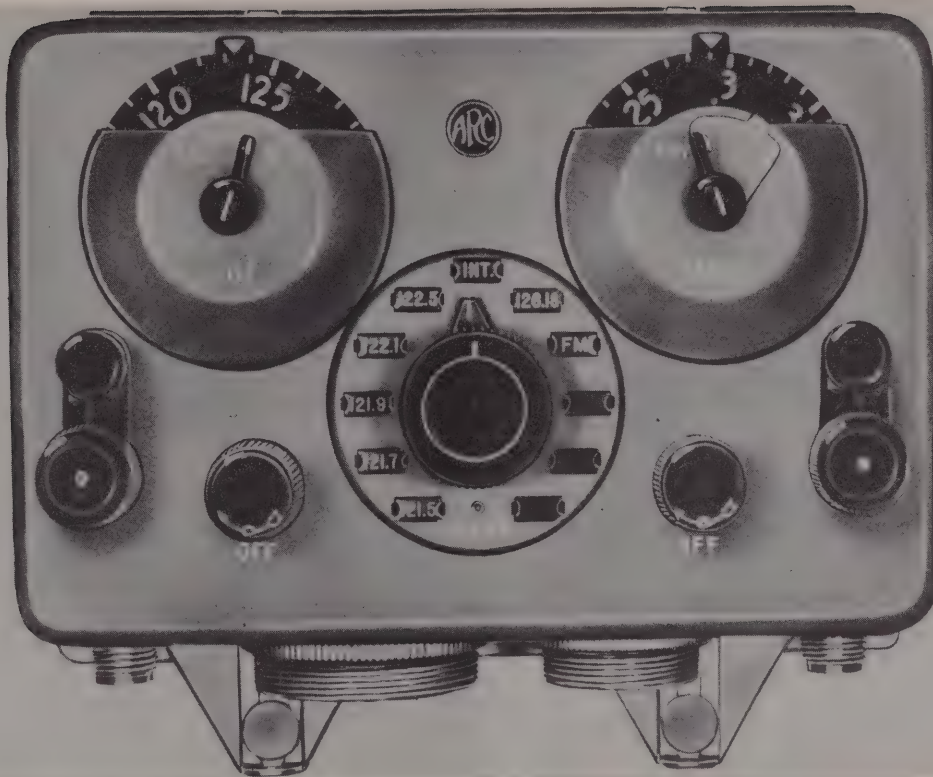


Figure 2-5B. Control Unit ARC Type C-37, Front Panel View

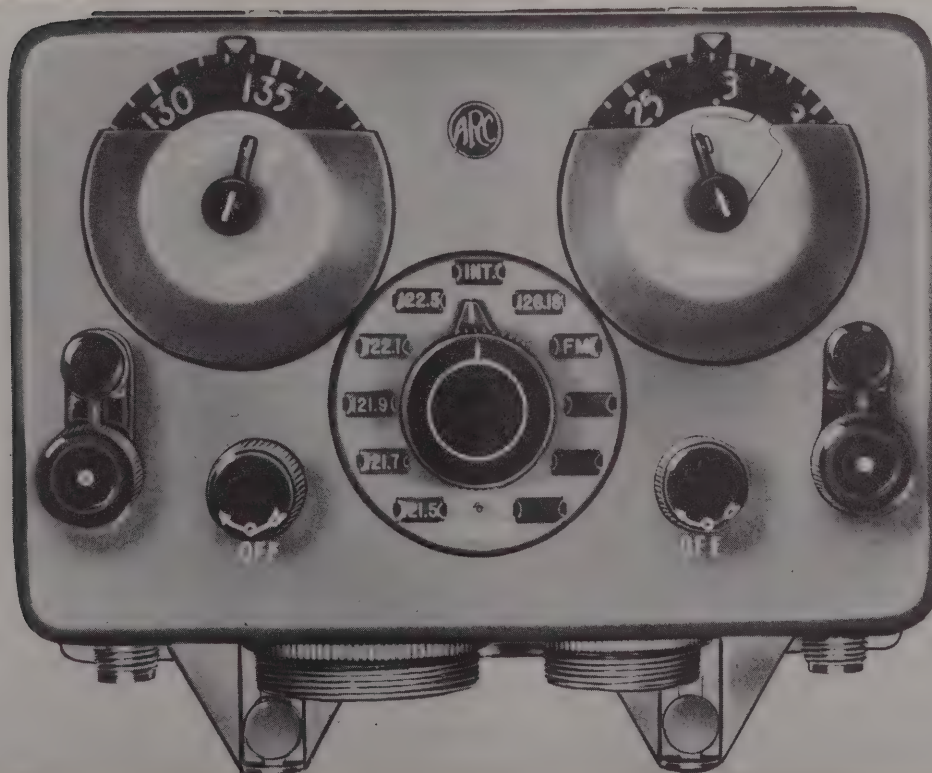


Figure 2-5C. Control Unit ARC Type C-38

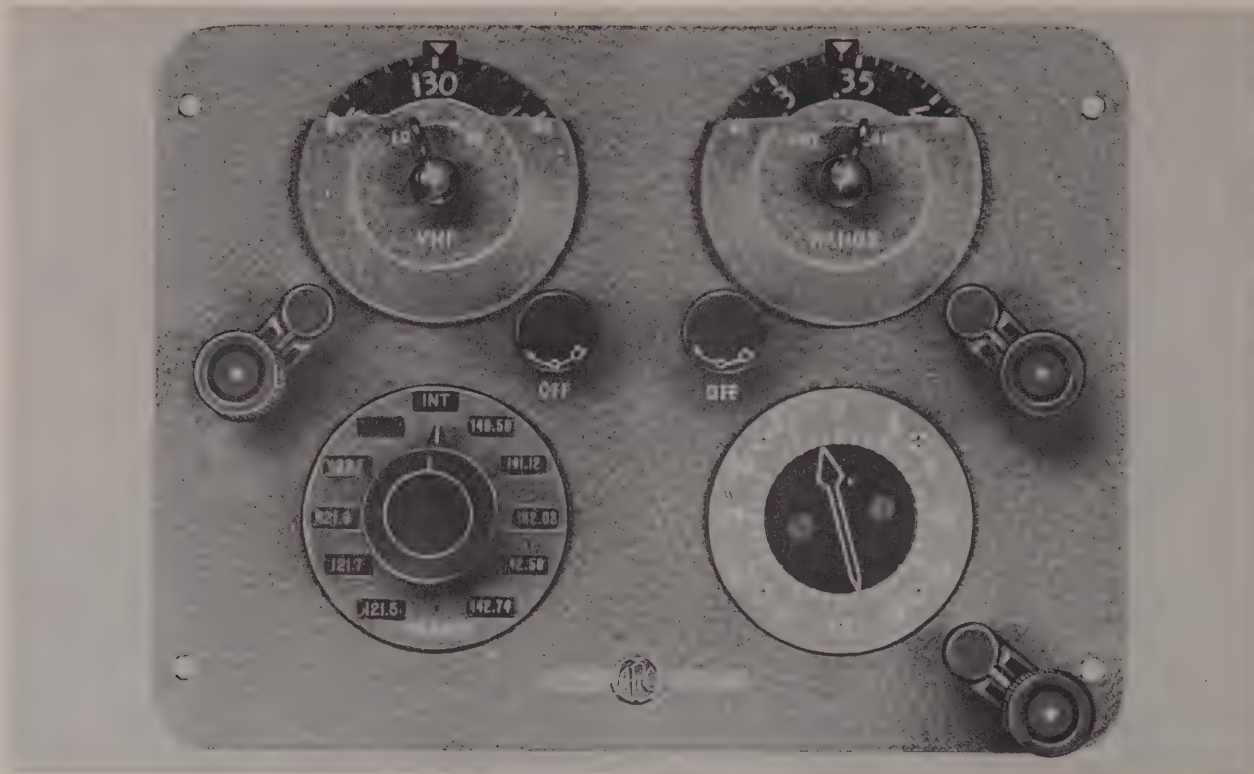


Figure 2-5D. Control Unit ARC Type C-39, Front Panel View

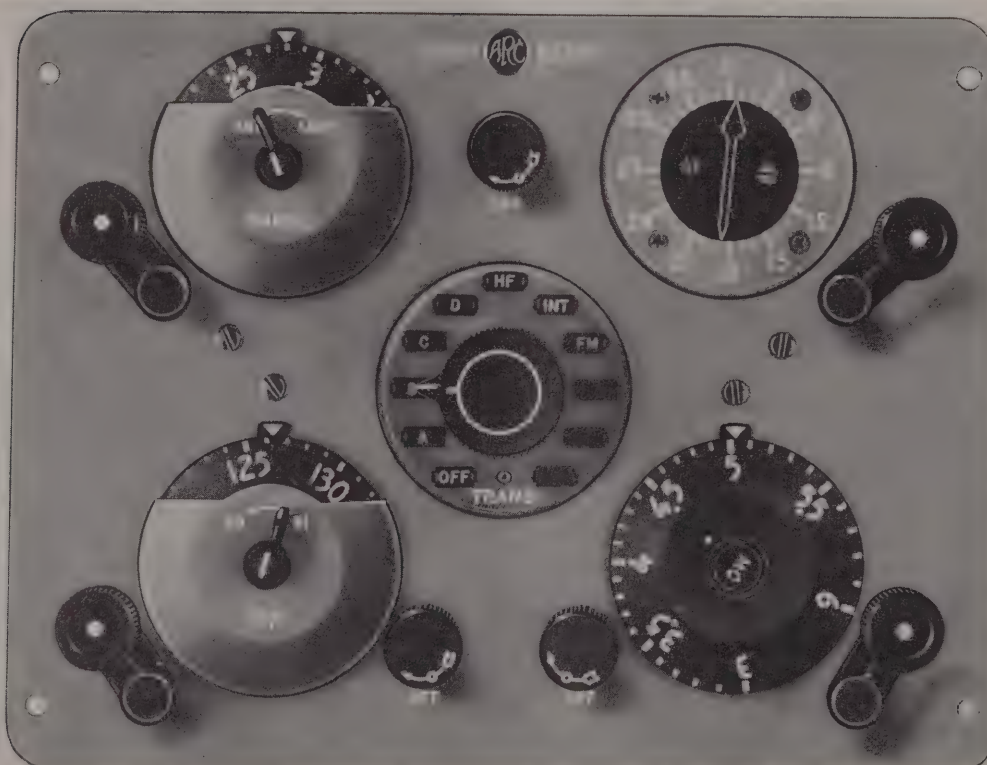


Figure 2-5E. Control Unit ARC Type C-40, Front Panel View

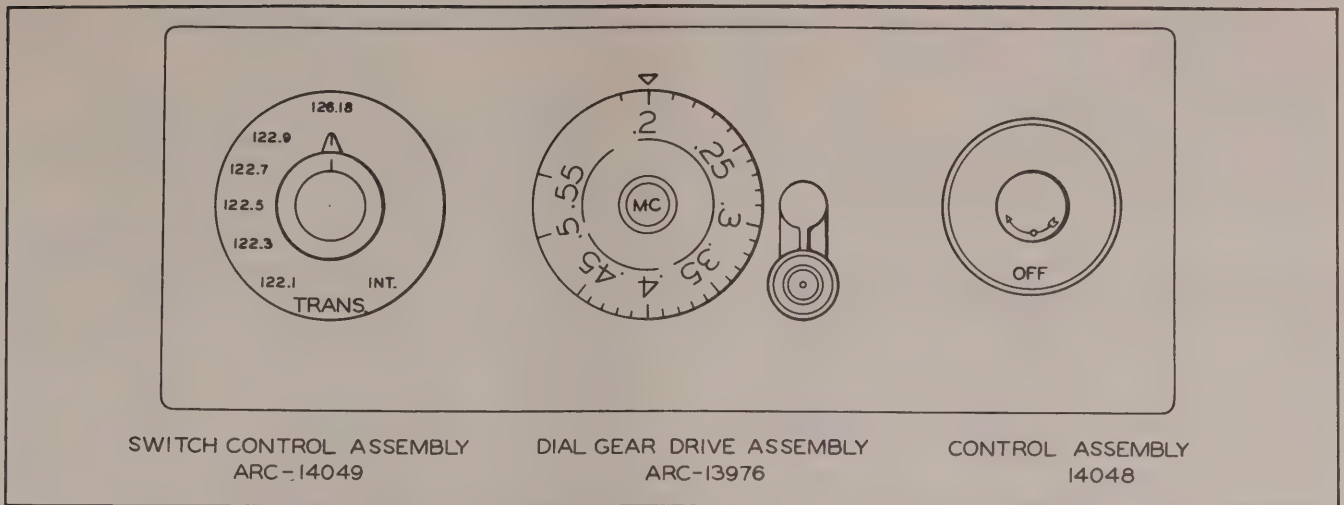


Figure 2-6. Radio Set ARC Type 12, Model H-13B Helicopter Installation, Operating Controls

2-10. T-11A, T-11B, T-13, AND T-13A TRANSMITTERS.

- Set airplane's electrical system "BATTERY" switch to "ON."
- Turn the "VHF" "OFF" control (the same as used for R-19 receiver) on the control unit on.
- Apply power to receiver which covers the frequency upon which a reply will be requested, by turning the appropriate "OFF" control clockwise. Allow all equipment to warm up for two or three minutes.
- Tune the selected receiver to desired frequency.
- Set the "TRANS." switch to desired channel.

NOTE

If necessary facilities are available, make a two-way radio check. If communicating with a military tower, turn the "TRANS." switch to "126.18", if a civilian tower, use "122.5"; if a CAA range station, use "122.1."

- Press microphone button, listen for sidetone, and check operation of the T-11A, T-11B, T-13, or T-13A transmitters by calling the selected station. State frequency upon which reply is awaited. Release microphone button as soon as transmission is completed.
- Set "TRANS." switch to "FM." This will disconnect the microphone and key circuits from the T-11A, T-11B, T-13, and T-13A transmitters. Check the performance of the transmitters' relay circuits by operating the SCR-619 equipment, as outlined in the applicable handbook.
- Press microphone button, listen for sidetone and speak through microphone, checking interphone transmission and headset reception. Check other microphone and headset in same manner. Release microphone button.
- Turn "OFF" control full counterclockwise (off).
- Set airplane "BATTERY" switch to "OFF."

2-11. OPERATION, AIRBORNE.**2-12. R-10A RECEIVER OPERATION WITH WIRE ANTENNA.**

- Check that airplane "BATTERY" switch is "ON."
- Turn "OFF" control of "B'CAST" control assembly

on and rotate full clockwise. Allow equipment to warm up for two or three minutes.

- Set "ANT.-LOOP" switch of "B'CAST" control assembly to "ANT."

- Rotate "B'CAST" tuning crank and tune receiver to desired station.

- Reduce signal level to comfortable level by turning "OFF" control clockwise and wait for station identification.

2-13. R-10A RECEIVER OPERATION WITH LOOP ANTENNA.

- Check that airplane "BATTERY" switch is "ON."
- Turn "OFF" control of "B'CAST" control assembly on, and rotate full clockwise. Allow equipment to warm up for two or three minutes.
- Set "ANT.-LOOP" switch of "B'CAST" control assembly to "LOOP."

CAUTION

Check that "RANGE" "ANT.-LOOP" switch is on "ANT." position. Optimum results are achieved when only one receiver is operated on "LOOP."

- Rotate "B'CAST" tuning crank and tune receiver to desired station.

- Turn the "LOOP" tuning crank rotating the L-10 loop antenna and adjust the sensitivity for the sharpest minimum signal. Alternately rotate the loop and adjust the sensitivity until this minimum signal is obtained.

- Read the bearing from the loop azimuth indicator dial. This is the bearing from the heading of the airplane.

CAUTION

Two such minima, 180 degrees apart, will be found. This ambiguity must be resolved by the pilot by knowing the general location of the airplane with respect to the station. If unknown, use either Method 1, described in paragraph 2-14, or Method 2, described in paragraph 2-15, to eliminate this ambiguity.

2-14. DETERMINATION OF STATION BEARING, METHOD 1.

- a. Reduce the volume of the received signal to the weakest that can be heard.
- b. Fly toward (or away) from the station.
- c. If the signal gets louder, the airplane is headed toward the station. If the signal disappears permanently, the airplane is headed away from the station.

2-15. DETERMINATION OF STATION BEARING, METHOD 2. Method 2 to resolve the reception of two minima signals, and thus determine the bearing of the airplane, requires an accurate determination of the null and a simultaneous reading of the gyro compass. This is followed by a flight of approximately five minutes, at 90 degrees to this reading, and a remeasurement of the bearing by reference to the gyro. An example follows.

- a. Turn the C-18 tuning crank for an "O" reading on the indicator dial.
- b. Head the airplane into a null signal and note the gyro reading G_1 .
- c. Fly for approximately five minutes at the G_1 reading plus 90 degrees.
- d. Head the airplane into a null signal, turning back toward heading G_1 , and note the gyro reading G_2 .
- e. If G_2 is less than G_1 , the heading G_1 is toward the station; if G_2 is greater than G_1 , G_1 is away from the station.

2-16. R-11A RECEIVER OPERATION. Except for the use of the "RANGE" controls, located on the control unit, operation of the R-11A receiver is identical with the R-10A receiver. Refer to paragraphs 2-12 through 2-15.

CAUTION

Do not operate the R-11A at full sensitivity as course-broadening may result.

2-17. R-19 RECEIVER OPERATION.

- a. Check that airplane "BATTERY" switch is set to "ON."
- b. Turn "OFF" control of "VHF" control assembly on and rotate full clockwise. Allow equipment to warm up for two or three minutes.

- c. Set the "VHF" "LO-HI" switch to "LO."

NOTE

Ordinarily the "LO" position will provide a strong enough signal. For outputs that cannot be increased through the sensitivity control, use the "HI" position.

- d. Turn the "VHF" tuning crank and tune in the desired station, reducing the sensitivity control so that the signal is weak as the station is tuned in.
- e. When the signal is tuned in accurately, increase the sensitivity control to maximum.

2-18. T-11A, T-11B, T-13, OR T-13A TRANSMITTER OPERATION.

- a. Check that airplane "BATTERY" switch is set to "ON."
- b. Turn "VHF" "OFF" control on.
- c. Apply power to receiver which covers the frequency upon which a reply will be requested, by turning the appropriate "OFF" control clockwise. Allow all equipment to warm up for two or three minutes.
- d. Tune the selected receiver to the desired frequency.
- e. Set "TRANS." switch to desired frequency channel or, if interphone is desired, to "INT." position. If operation of the SCR-619 (if installed) is desired, set the "TRANS." switch to "FM."
- f. Press microphone button, listen for sidetone, and speak through microphone. State frequency upon which reply is awaited.
- g. Release microphone button as soon as transmission is completed.

2-19. OPERATION, SECURE.

2-20. RECEIVERS.

- a. Turn "OFF" control of receiver full counterclockwise (off).
- b. Set airplane "BATTERY" switch to "OFF."

2-21. TRANSMITTERS. Turn "VHF" "OFF" control full counterclockwise.

2-22. EMERGENCY TURN-OFF PROCEDURE. To turn the equipment off in an emergency set the airplane "BATTERY" switch to "OFF."

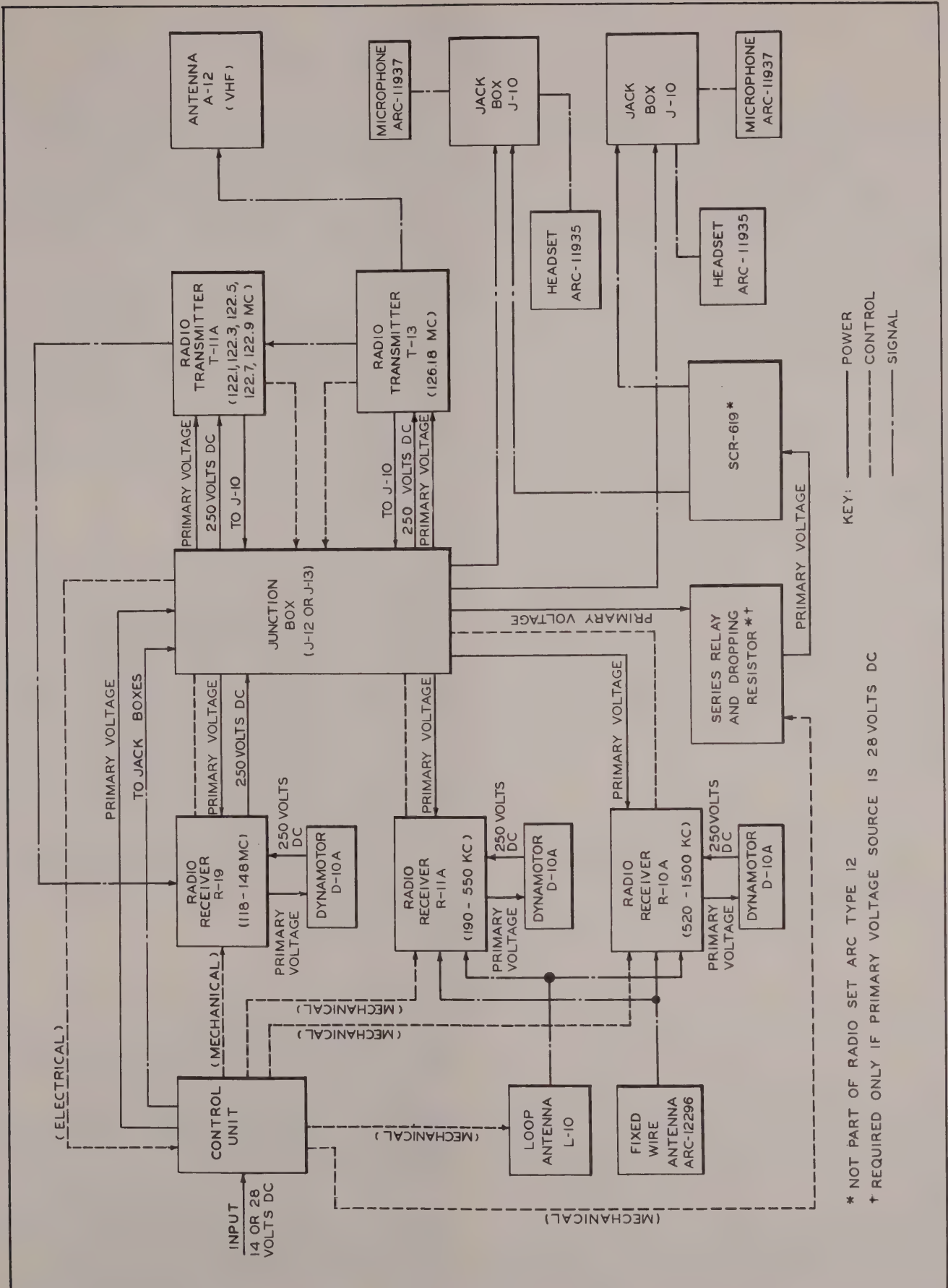


Figure 2-7. Radio Set ARC Type 12, Typical Aircraft Installation, Simplified Block Diagram

SECTION III

OPERATING CHECKS AND ADJUSTMENTS

3-1. PREFLIGHT OPERATING CHECKS AND ADJUSTMENTS.

3-2. Make the following preflight operating checks and adjustments as applicable.

a. Check that all cables and mechanical linkage are securely and properly connected, and that all connector rings are hand tight.

b. Turn airplane "BATTERY" switch "ON" and all control unit "OFF" controls on. Feel dynamotors to check that they are operating.

c. Check that tuning cranks and "TRANS." selector switch turn easily and without binding or slipping at any point.

d. Check that L-10 loop antenna rotates without binding when loop tuning crank is operated. Compare loop position with azimuth indicator dial bearing. At a 90-degree reading, the plane of the loop should be exactly fore and aft.

e. Check that microphone and headset are in place and plugged in properly in J-10 jack boxes.

f. If T-13 or T-13A transmitter is to be operated, check that "frequency-extending" capacity plate ARC-15392 in the T-13 or ARC-15900 in the T-13A is in position and secured. (Refer to paragraph 1-18A.)

g. Remove the top cover of the transmitters and compare the output frequency of each crystal, marked on top of the crystal container, and its socket position with the corresponding frequency tabs and their positions located on the "TRANS." switch. Starting from the extreme counterclockwise setting of the "TRANS." switch, each consecutive group of five positions corresponds to sockets "1," "2," "3," "4," and "5." Replace cover.

NOTE

Crystals which are housed in containers not stamped "HERMETIC" or "OK" on the two opposite sides of the container should be tested for frequency accuracy under actual transmitting conditions, or equivalent. If a tolerance

of $\pm .02\%$ for ARC-10714 crystal units, or $.01\%$ for ARC-14958 crystal units, of the nominal frequency which is stamped on the face of the container is not realized, replace the crystal. Mark all crystals which are not faulty accordingly and reinstall.

3-3. AIRBORNE OPERATING CHECKS AND ADJUSTMENTS.

3-4. The following airborne operating checks and adjustments should be performed as applicable.

a. When tuning the R-10A or R-11A receiver, the corresponding sensitivity control should be adjusted to reduce the signal when receiving range signals, as course-broadening may result when operating at full sensitivity.

b. When the L-10 loop antenna is in use with either the R-10A or R-11A receiver, reduce the corresponding sensitivity control to the weakest point of the signal to prevent AVC interaction.

CAUTION

Do not operate the R-10A and R-11A simultaneously on "LOOP."

c. Before transmitting, check that "TRANS." switch is in the desired frequency channel position.

d. When tuning the R-15 or R-19 receiver, the "LO" position of the "VHF" control assembly "LO-HI" switch should be used and the corresponding sensitivity control adjusted for maximum tolerable noise before tuning to the desired station. Final tuning should be done with this control backed off so that the signal is weak. As a final adjustment, increase this control to maximum point. If several headsets are used simultaneously, the "HI" position should be used.

e. Release microphone button as soon as transmission is completed.

f. Do not call a station until you have first listened to make certain it is not communicating with another station.

SECTION IV

EMERGENCY OPERATION AND REPAIR

4-1. EMERGENCY OPERATION.

4-2. Table 4-1 is a suggested list of procedures to be used for emergency operation of the equipment. It is assumed that the indicated parts or components are defective and that no replacements are available. Since some of the procedures require access to the interiors of the components, they are not always practicable in flight.

4-3. EMERGENCY REPAIR.

4-4. REPLACEMENT OF CRYSTAL UNITS. The T-11A, T-11B, T-13 and T-13A transmitters may

each contain from one to five crystal units. To replace a crystal unit, proceed as follows:

- Shut down all power to transmitter.
- Slide back the slide-fasteners which secure the top cover of the transmitter and remove the cover.
- Pull out the defective crystal from its socket and plug in the new crystal.
- Replace cover and secure.

4-5. REPLACEMENT OF VACUUM TUBES. All vacuum tubes are accessible from the top of the component. To replace a vacuum tube, proceed as follows:

- Shut down all power to component.

TABLE 4-1. EMERGENCY OPERATION

TROUBLE	REMEDY
DYNAMOTOR FAILURE	Replace with dynamotor from unused or least necessary receiver.
R-11A RECEIVER DEFECTIVE	If R-11A is defective and R-10A is available it is possible to utilize commercial broadcast signals in the vicinity of the destination for navigation information by using R-10A and L-10 loop antenna.
VACUUM TUBE FAILURE	Replace with corresponding type from component not in use or required least.
FUSE FAILURE	If receiver fuse has failed and other receivers installed contain fuses, replace with fuse from receiver not in use or from one not required to complete mission. Active fuses for installations including a J-12 or J-13 junction box are contained therein. If fuses are installed on front panels of receivers of such installations, they are inactive and therefore may be used to replace a defective fuse in the junction box.
CONTROL UNIT FAILURE	Since no facilities for local operation are available, disconnect the non-defective control unit from the receiver not in use, or least required, and substitute for defective component. Disregard substitute control unit dial indications. If a C-16 is substituted for a C-17 (or correspondingly a "B'CAST" control assembly for a "RANGE" control assembly), set the "ANT.-LOOP" switch in "LOOP" position for emergency operation.
FAILURE OF RECEIVER POWERING TRANSMITTER	Disconnect transmitter from defective receiver and connect to non-defective receiver to restore transmission.
LOOP ANTENNA CONTROL UNIT FAILURE	Use wire antenna for reception.
MECHANICAL LINKAGE FAILURE	Substitute mechanical linkage to component not in use or least required.
BATTERY NOT RECHARGING	To conserve battery, turn off all components except one actually in use.
SEVERE OUTSIDE INTERFERENCE	Use only VHF components: R-15, R-19, T-11A, T-11B, T-13, T-13A. Turn all others off.
POOR RECEPTION WITH WIRE ANTENNA	Use loop antenna.
TRANSMITTER FAILURE	Substitute remaining transmitter, relocating crystal units from defective transmitter if necessary. If due to "power supply" receiver failure, reconnect transmitter to operating receiver. See figure 4-15, 4-16, 4-17, or 4-18.

- b. Slide back the slide-fasteners which secure the top cover of the component and remove the cover.
- c. Pull out the defective tube and insert the new tube.
- d. Replace cover and secure.

4-6. REPLACEMENT OF FUSES. Early receivers delivered contained a 20-ampere cartridge fuse installed in an extractor-type fuse holder located on the receiver front panel. If such fuses are installed, and replacement is required, proceed as follows:

- a. Shut down power to component.
- b. Rotate fuse holder cap a quarter-turn counterclockwise and remove. The fuse is held in a socket secured to the cap. Remove the defective fuse.

- c. Insert a new fuse in the cap-socket, and replace the cap in the fuse holder body. Secure with a quarter-turn clockwise.

4-7. The J-12 and J-13 junction boxes each contain three 20-ampere cartridge fuses installed in clip holders. To replace, pull defective fuse out of clips and insert new one.

4-8. LOCATION OF VACUUM TUBES AND CRYSTAL UNITS. Figures 4-1 through 4-4C illustrate the location of the vacuum tubes and crystal units in the individual components of Radio Set ARC Type 12.

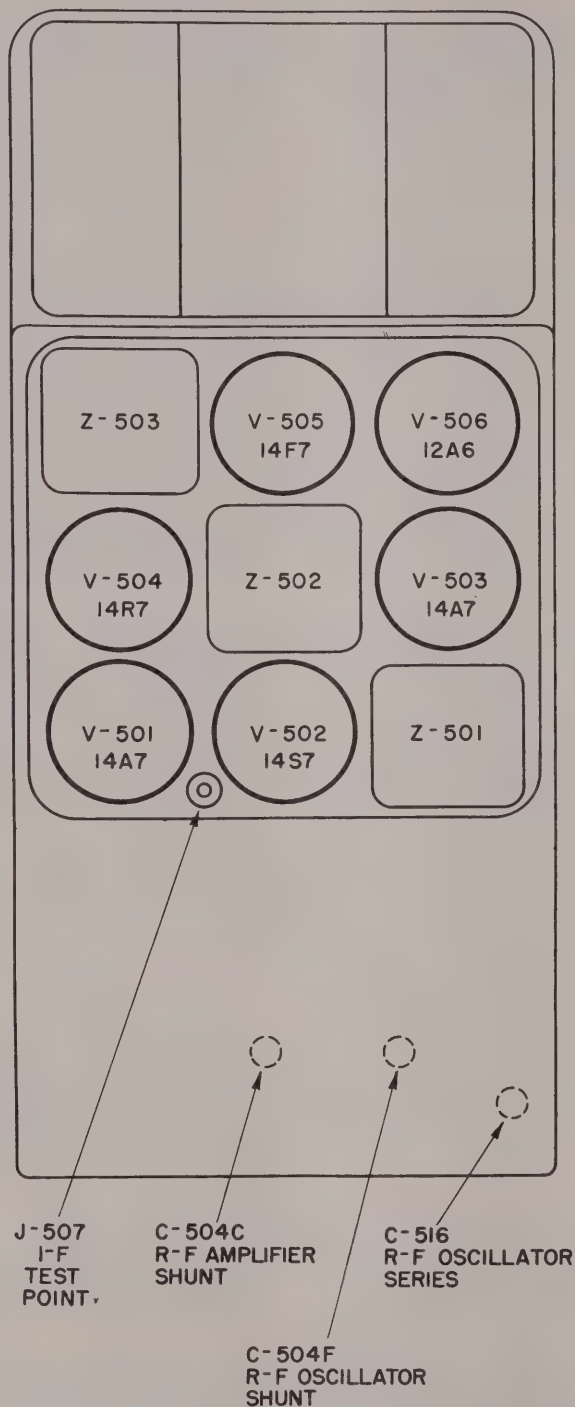


Figure 4-1. Radio Receiver ARC Type R-10A, Top View, Cover Removed

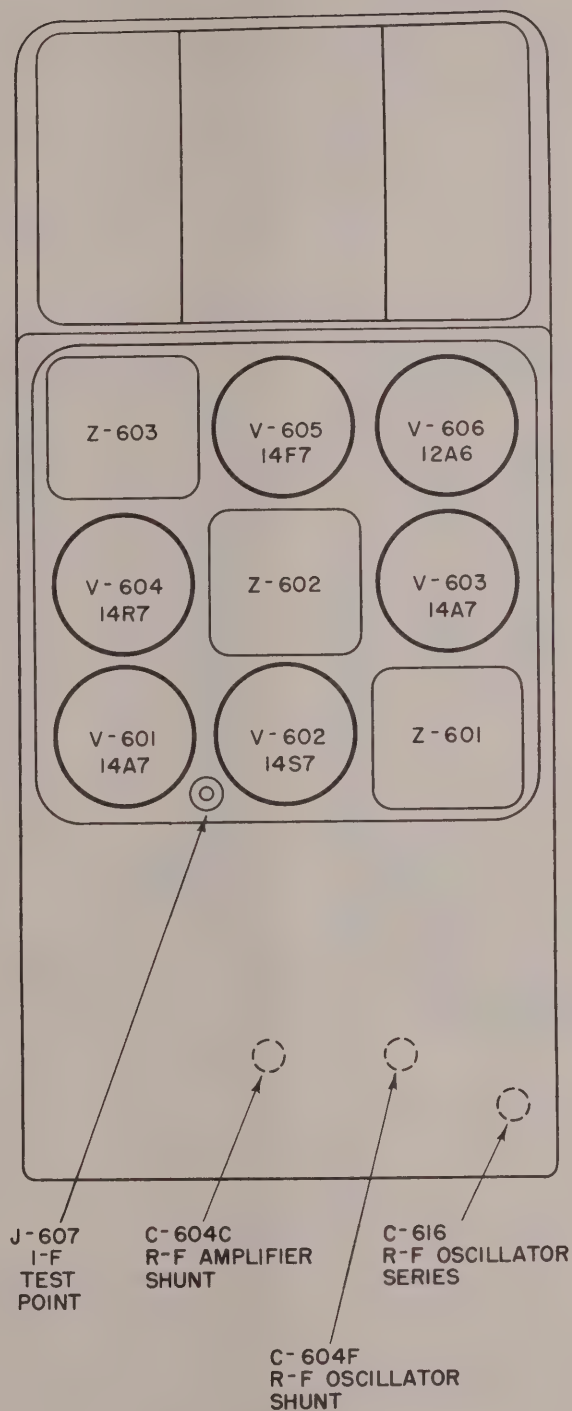


Figure 4-2. Radio Receiver ARC Type R-11A, Top View, Cover Removed

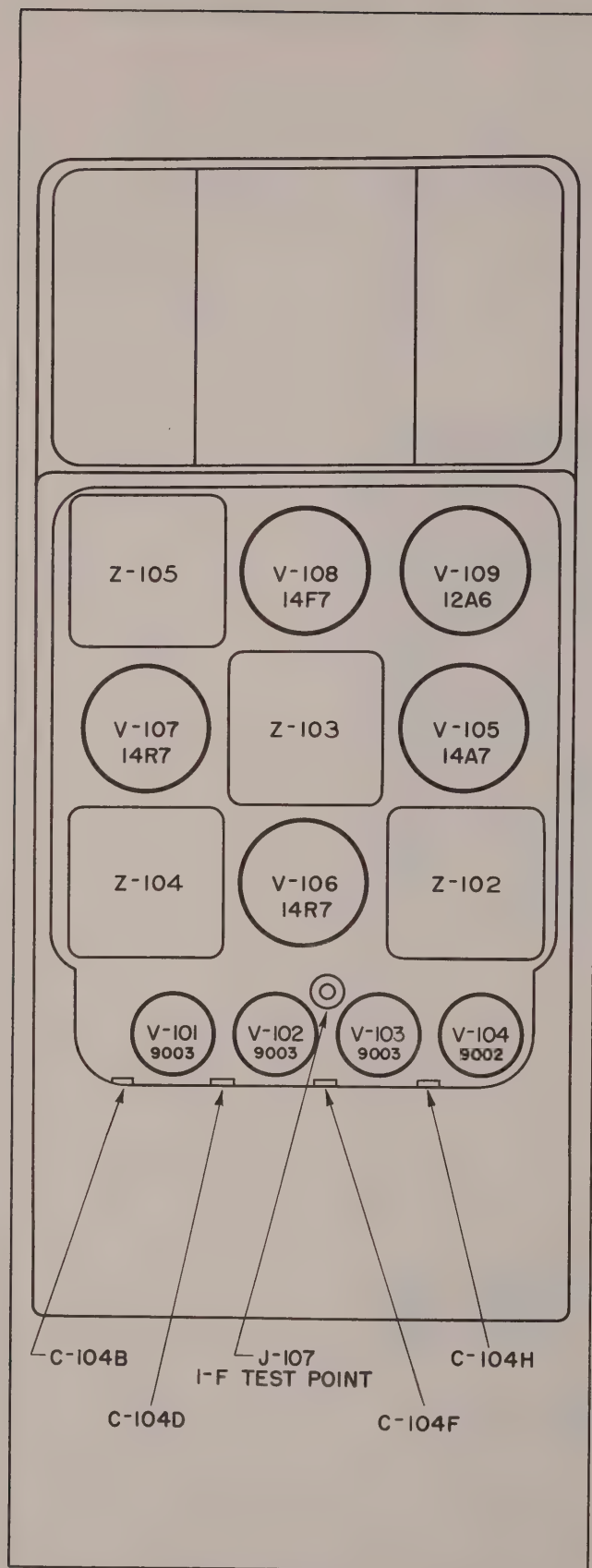


Figure 4-3. Radio Receiver ARC Type R-15,
Top View, Cover Removed

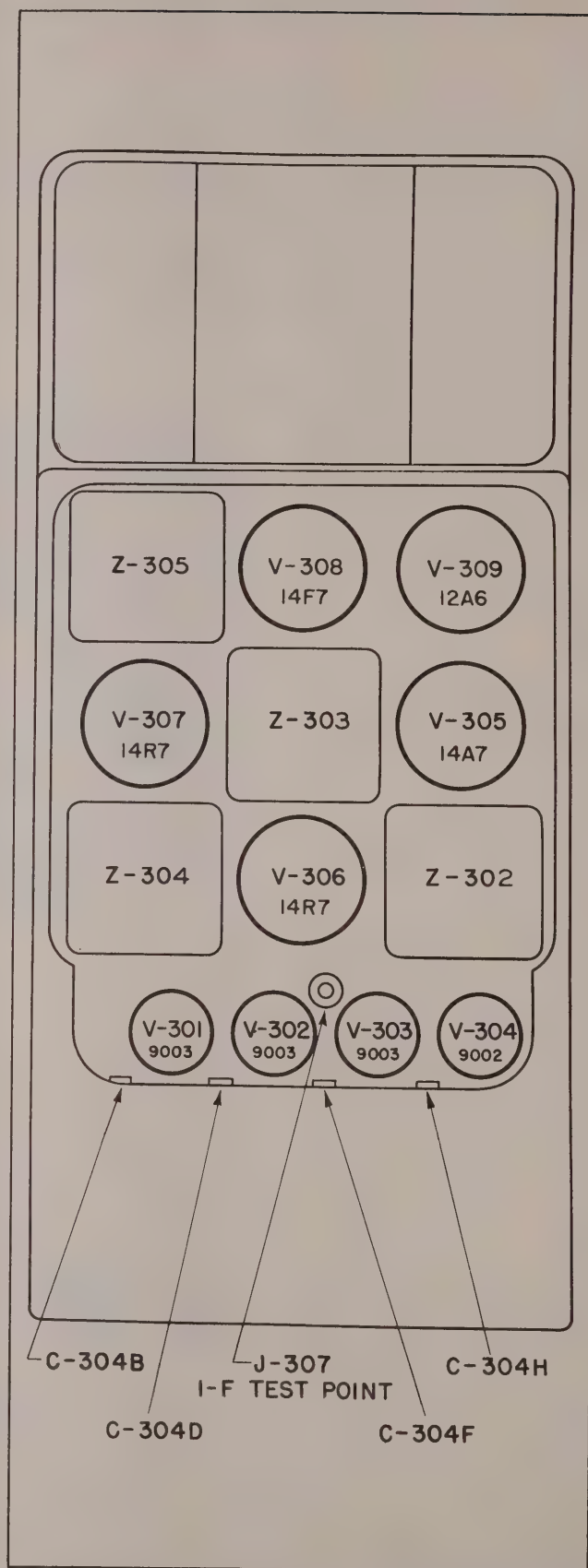


Figure 4-3A. Radio Receiver ARC Type R-19,
Top View, Cover Removed

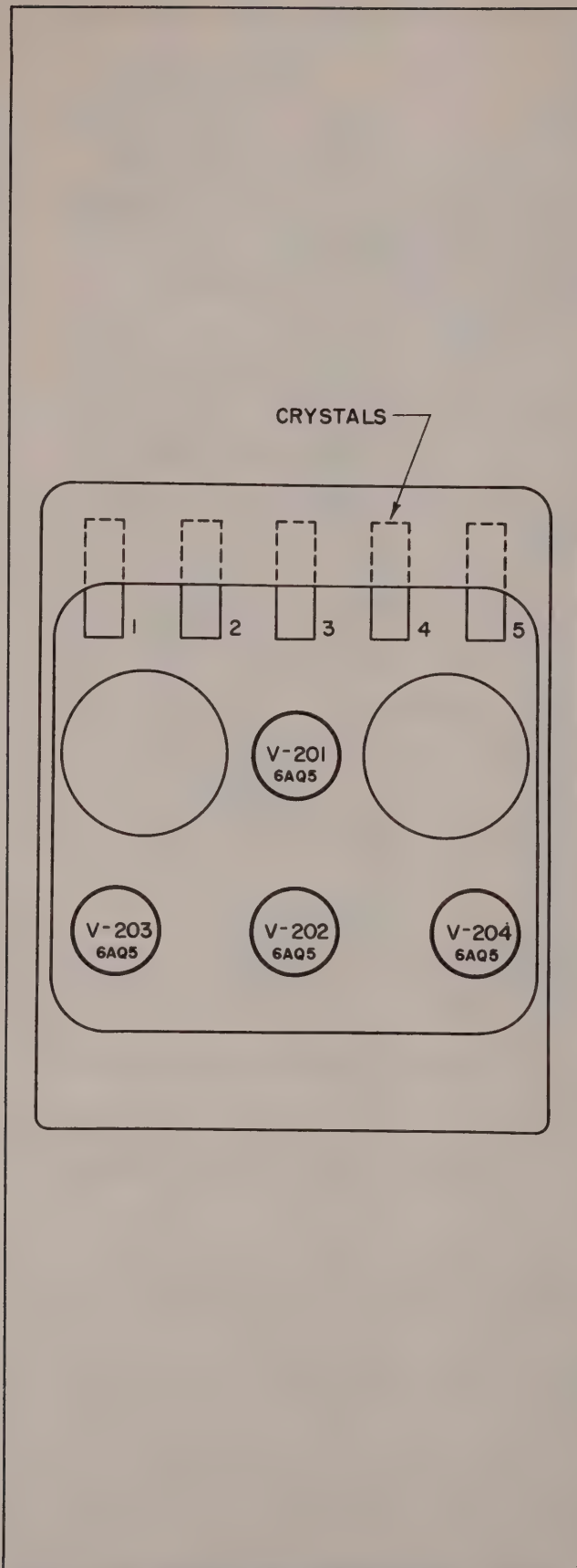


Figure 4-4. Radio Transmitter ARC Type T-11A,
Top View, Cover Removed

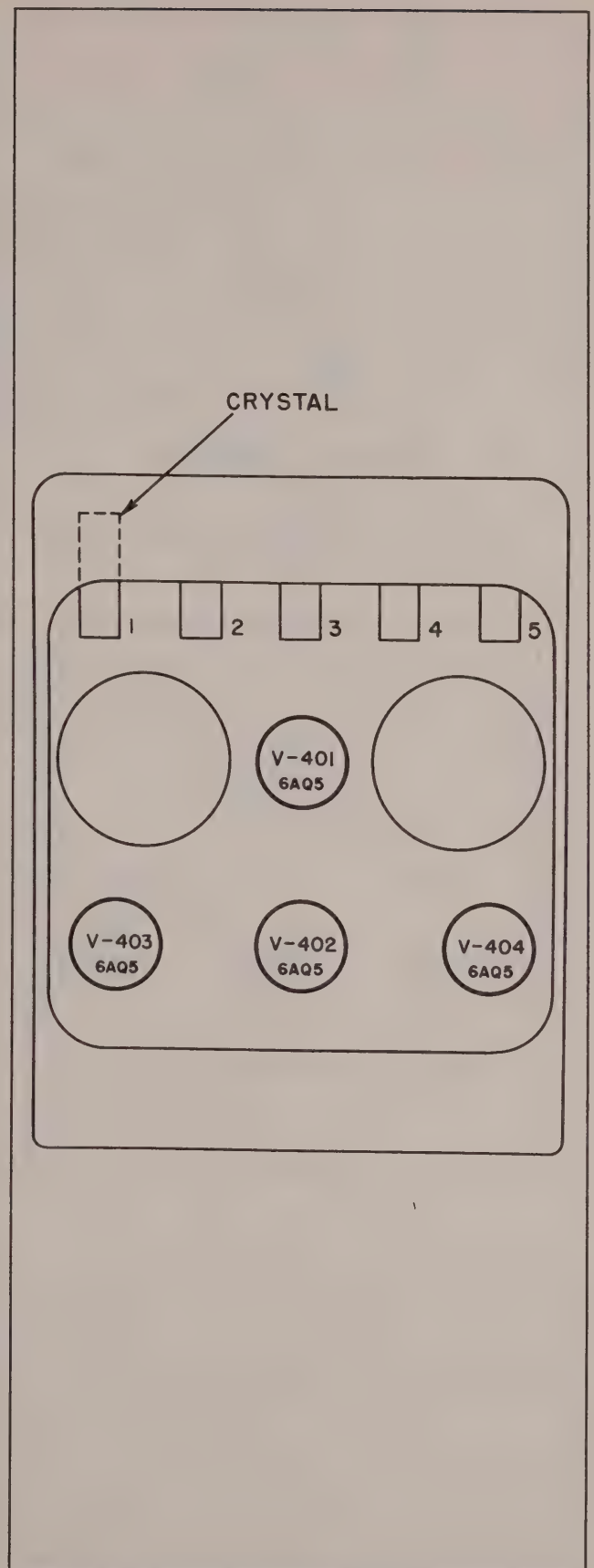


Figure 4-4A. Radio Transmitter ARC Type T-13,
Top View, Cover Removed

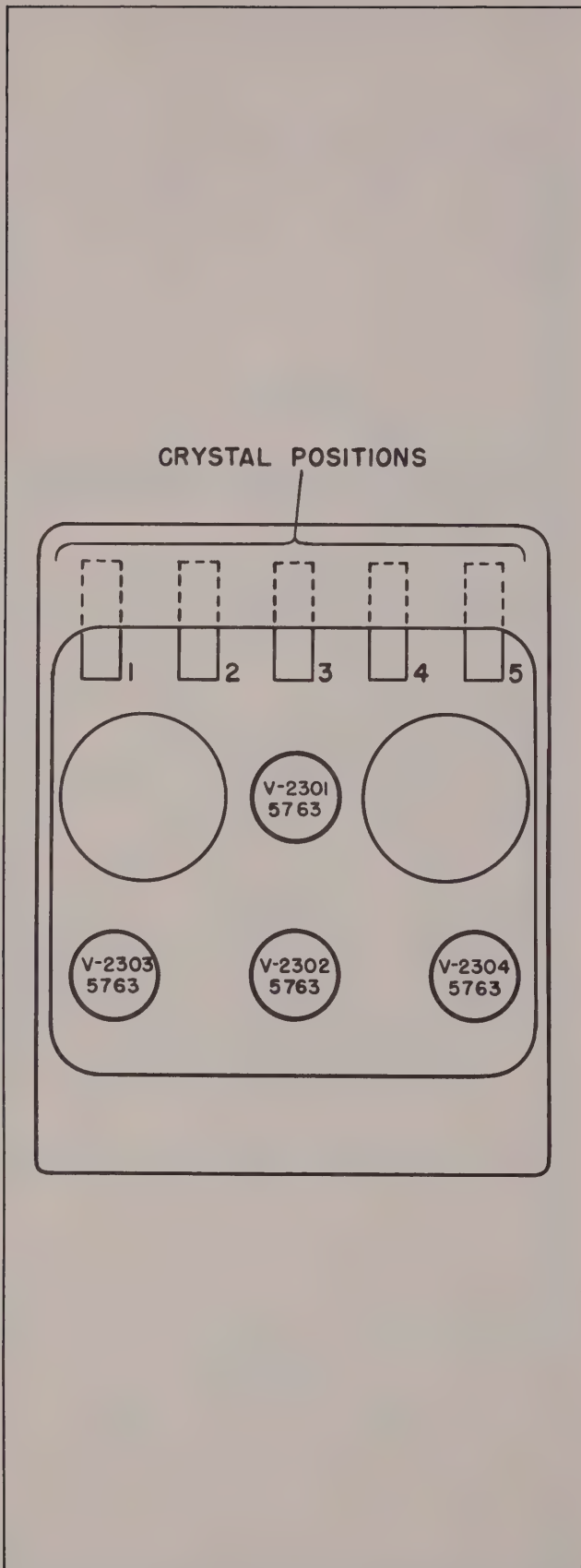


Figure 4-4B. Radio Transmitter ARC Type T-11B,
Top View, Cover Removed

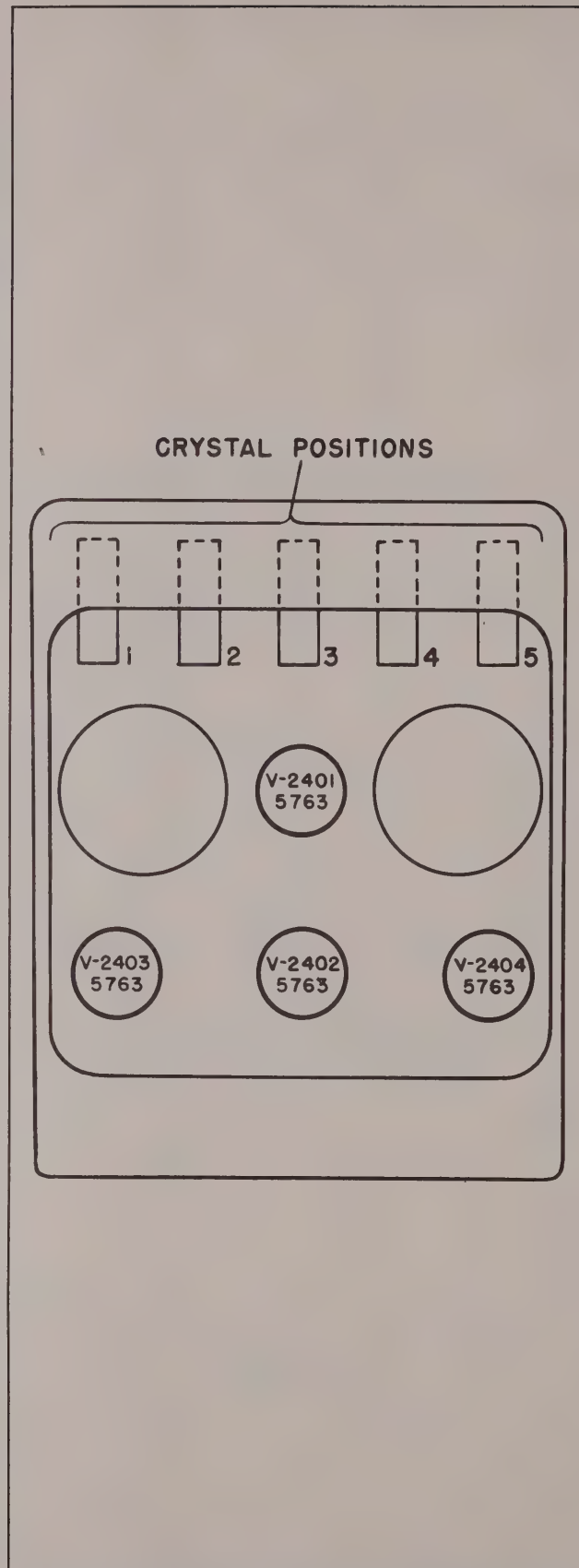
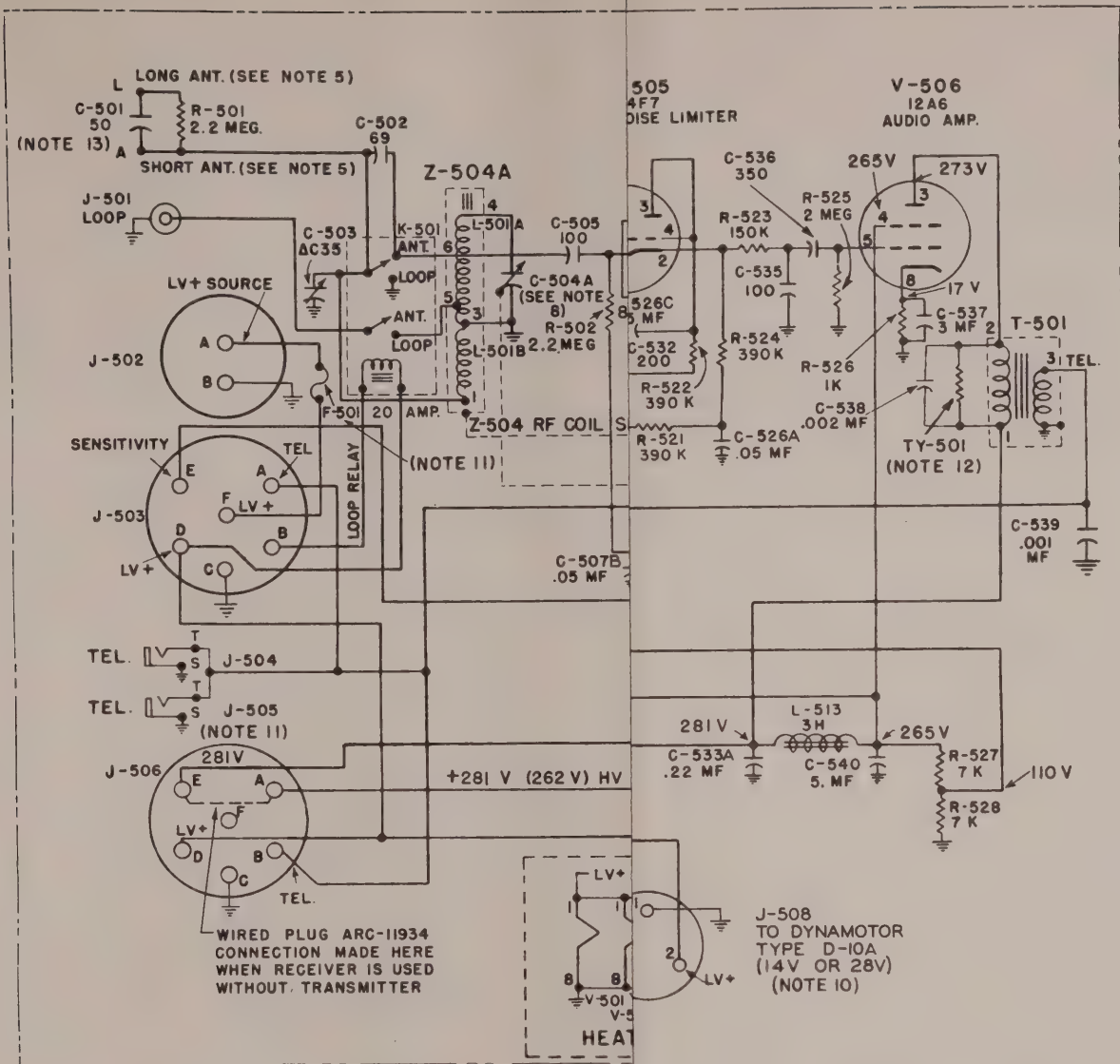


Figure 4-4C. Radio Transmitter ARC Type T-13A,
Top View, Cover Removed



NOTES:

1. CONNECTIONS ARE SHOWN TO WIRED SIDE OF CONNECTORS. TORS HAVE A ΔC OF 17 MMF.
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS FOLLOWED BY "M". EACH TRIMMER HAS A ΔC OF 16 MMF.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K".
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS FOLLOWED BY "H".
5. A "SHORT" ANTENNA IS DEFINED AS ONE HAVING AN EFFECTIVE LENGTH OF 1/4 WAVE OR GREATER. BEGINNING WITH SERIAL NO. 365 OF R-10A (14V) AND SERIAL NO. 75 OF R-10A (28V), POST CONNECTION WAS DELETED AND "L" ANTENNA TERMINATION WAS ADDED. (14V) AND SERIAL NO. 75 OF R-10A (28V).
6. DC VOLTAGE VALUES ARE APPROXIMATE AND ARE BASED ON:
 - A. HIGH VOLTAGE SUPPLIED BY D-10A DYNAMOTOR. IF D-10A IS USED, SERIAL NO. 365 OF R-10A (14V) AND SERIAL NO. 75 OF R-10A (28V).
 - B. LV+ AT TERMINAL 2 OF J-508 SET AT 13.5 VOLTS (FOR 14V OR 28V).
 - C. SENSITIVITY LINE, TERMINAL E OF J-503 GROUNDING; NO TRANSMITTER.
 - D. 20,000 OHMS-PER-VOLT OR 1,000 OHMS-PER-VOLT VOLTS.
 - E. ALL VOLTAGES ARE APPROXIMATE. VOLTAGES IN PARENTHESES ARE FOR POWER TO A TRANSMITTER CONNECTED TO J-506; NO TRANSMITTER.
 - F. NEGATIVE TERMINAL OF VOLTMETER GROUNDING TO CHASSIS.

Figure 4-5. Radio Receiver ARC Type R-1

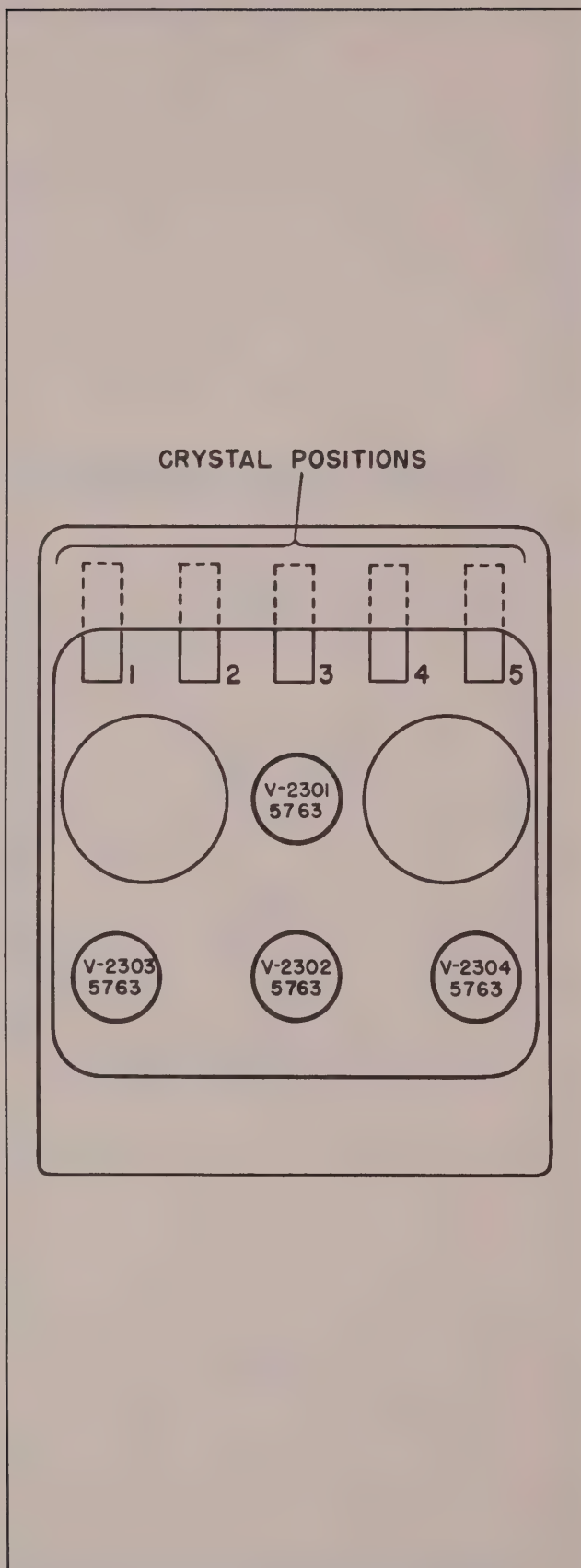


Figure 4-4B. Radio Transmitter ARC Type T-11B,
Top View, Cover Removed

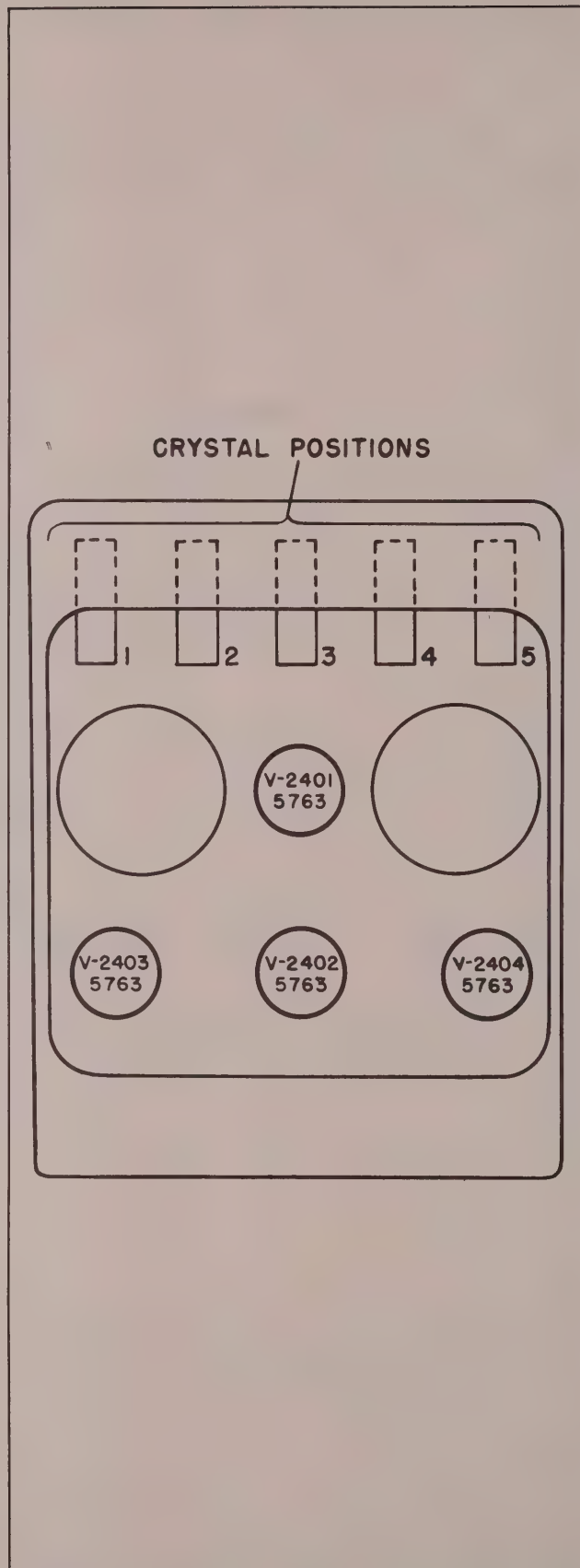
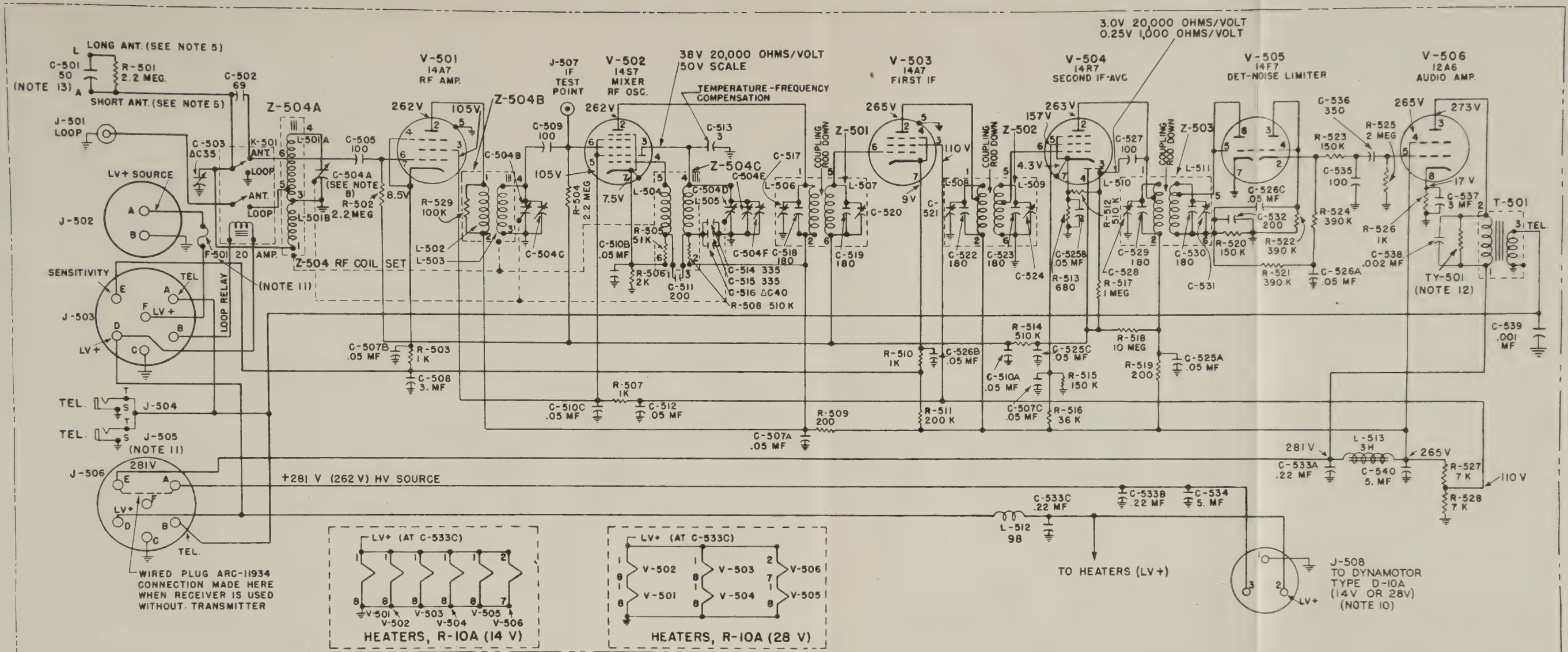


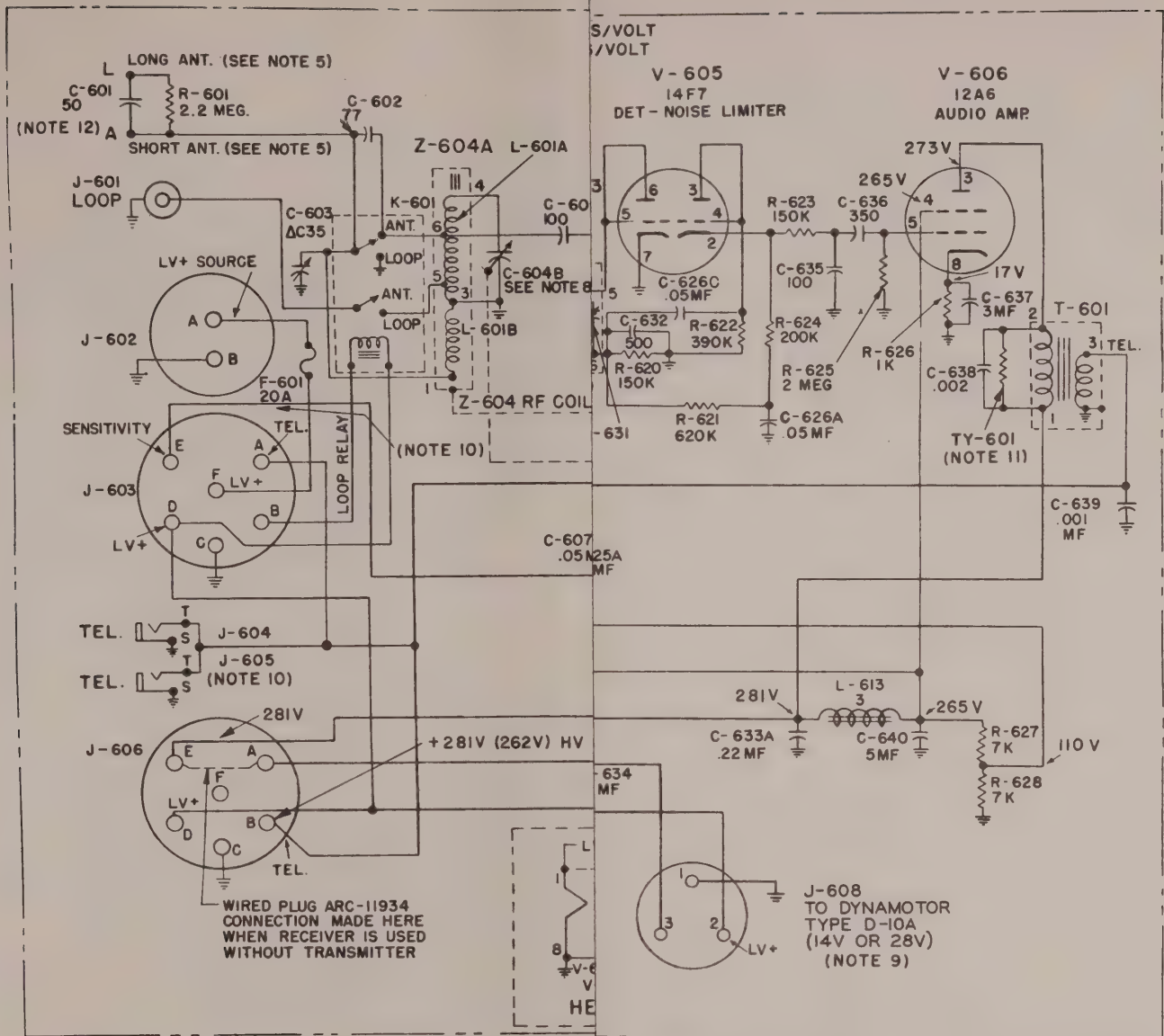
Figure 4-4C. Radio Transmitter ARC Type T-13A,
Top View, Cover Removed



NOTES:

1. CONNECTIONS ARE SHOWN TO WIRED SIDE OF CONNECTORS.
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS FOLLOWED BY "MF"—MICROFARAD.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K"—KILOHM (1,000 OHMS) OR "MEG"—MEGOHM (1,000,000 OHMS).
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS FOLLOWED BY "MH"—MILLIHENRY (1,000 MICROHENRIES) OR "H"—HENRY.
5. A "SHORT" ANTENNA IS DEFINED AS ONE HAVING AN EFFECTIVE CAPACITANCE OF 21-50 MMF AND A "LONG" ONE AS 50 MMF OR GREATER. BEGINNING WITH SERIAL NO. 365 OF R-10A (14V) AND SERIAL NO. 75 OF R-10A (28V) "A" ANTENNA TERMINAL POST CONNECTION WAS DELETED AND "L" ANTENNA TERMINAL POST WAS MARKED "A".
6. DC VOLTAGE VALUES ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING CONDITIONS:
 - A. HIGH VOLTAGE SUPPLIED BY D-10A DYNAMOTOR. IF D-10 DYNAMOTOR IS USED VOLTAGES WILL BE APPROXIMATELY 10% LESS.
 - B. LV+ AT TERMINAL 2 OF J-508 SET AT 13.5 VOLTS (FOR 14V RECEIVER) OR 27 VOLTS (FOR 28V RECEIVER) BY ADJUSTMENT OF LV+ SOURCE.
 - C. SENSITIVITY LINE, TERMINAL E OF J-503 GROUNDED; NO SIGNAL INPUT.
 - D. 20,000 OHMS-PER-VOLT OR 1,000 OHMS-PER-VOLT VOLTmeter USED, UNLESS OTHERWISE INDICATED.
 - E. ALL VOLTAGES ARE APPROXIMATE. VOLTAGES IN PARENTHESES ARE THOSE OBTAINED WHEN DYNAMOTOR ALSO SUPPLIES POWER TO A TRANSMITTER CONNECTED TO J-506; NO RECEIVER DRAIN.
 - F. NEGATIVE TERMINAL OF VOLTmeter GROUNDED TO CHASSIS.
7. THE I-F IS 239 KC. ALL THE I-F TRIMMER CAPACITORS HAVE A ΔC OF 17 MMF.
8. EACH TUNING SECTION OF C-504 HAS A ΔC OF 346 MMF. EACH TRIMMER HAS A ΔC OF 16 MMF.
9. SYMBOL NO. C-506 NOT USED.
10. REFER TO PARAGRAPH I-19.
11. DELETED BEGINNING WITH SERIAL NO. 365 OF R-10A (14V) AND SERIAL NO. 75 OF R-10A (28V).
12. ADDED BEGINNING WITH SERIAL NO. 365 OF R-10A (14V) AND SERIAL NO. 75 OF R-10A (28V).
13. VALUE CHANGED TO 60 MMF BEGINNING WITH SERIAL NO. 365 OF R-10A (14V) AND SERIAL NO. 75 OF R-10A (28V).

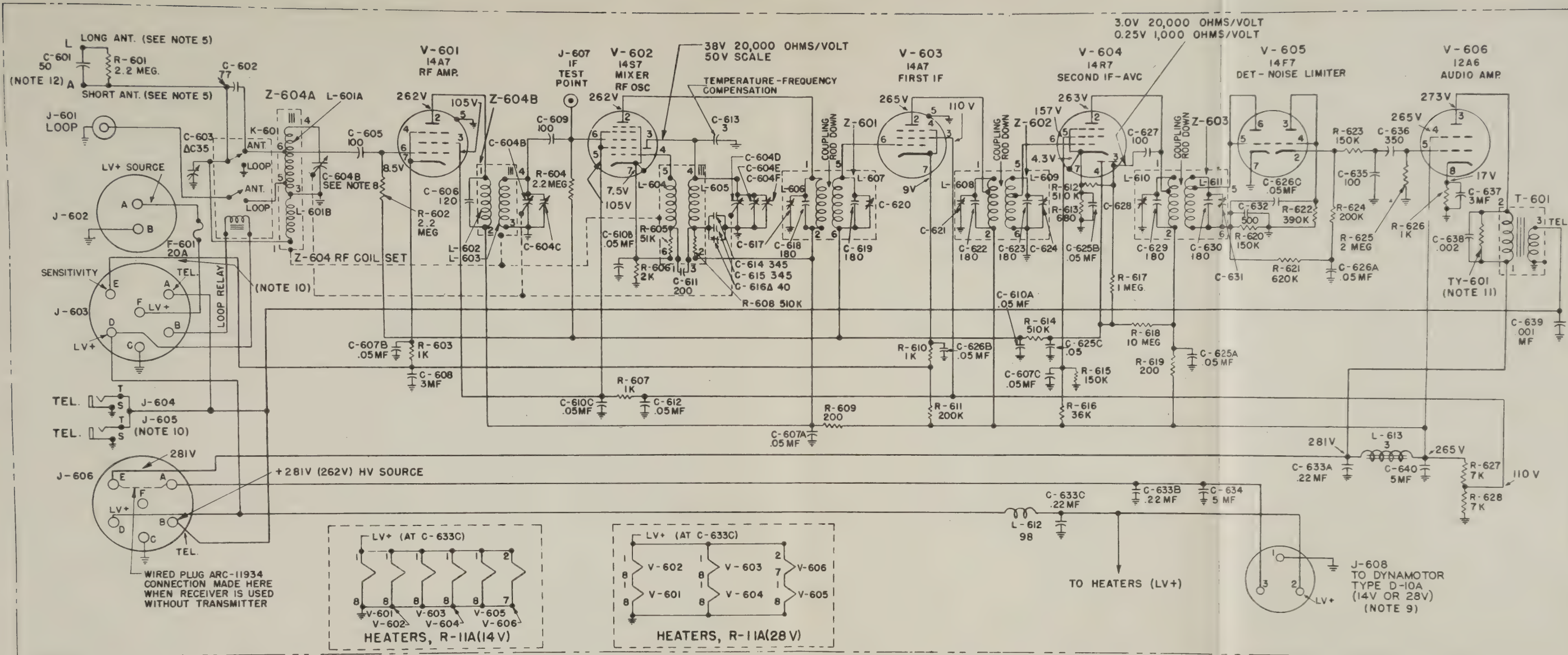
Figure 4-5. Radio Receiver ARC Type R-10A(14v) and Type R-10A(28v), Schematic Diagram



NOTES:

1. CONNECTIONS ARE SHOWN TO WIRED SIDE OF CONNECTORS HAVE A ΔC OF 17 MMF.
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS OTHERWISE SPECIFIED. EACH TRIMMER HAS A ΔC OF 16 MMF.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY A LETTER OR A NUMBER.
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS FOLLOWED BY A LETTER OR A NUMBER.
5. A "SHORT" ANTENNA IS DEFINED AS ONE HAVING AN INDUCTANCE OF 100 OHMS OR GREATER. BEGINNING WITH SERIAL NO. 530 OF R-11A (14V) AND SERIAL NO. 1405 OF R-11A (28V). POST CONNECTION WAS DELETED AND "L" ANTENNA CONNECTION WAS MADE TO SERIAL NO. 530 OF R-11A (14V) AND SERIAL NO. 1405 OF R-11A (28V).
6. DC VOLTAGE VALUES ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING:
 - A. HIGH VOLTAGE SUPPLIED BY D-10A DYNAMOTOR. 110V AC.
 - B. LV+ AT TERMINAL 2 OF J-602 SET AT 13.5 VOLTS.
 - C. SENSITIVITY LINE, TERMINAL E OF J-603 GROUND.
 - D. 20,000 OHMS-PER-VOLT OR 1,000 OHMS-PER-VOLT.
 - E. ALL VOLTAGES ARE APPROXIMATE. VOLTAGES MEASURED WITH POWER TO A TRANSMITTER CONNECTED TO J-601.
 - F. NEGATIVE TERMINAL OF VOLTMETER GROUND.

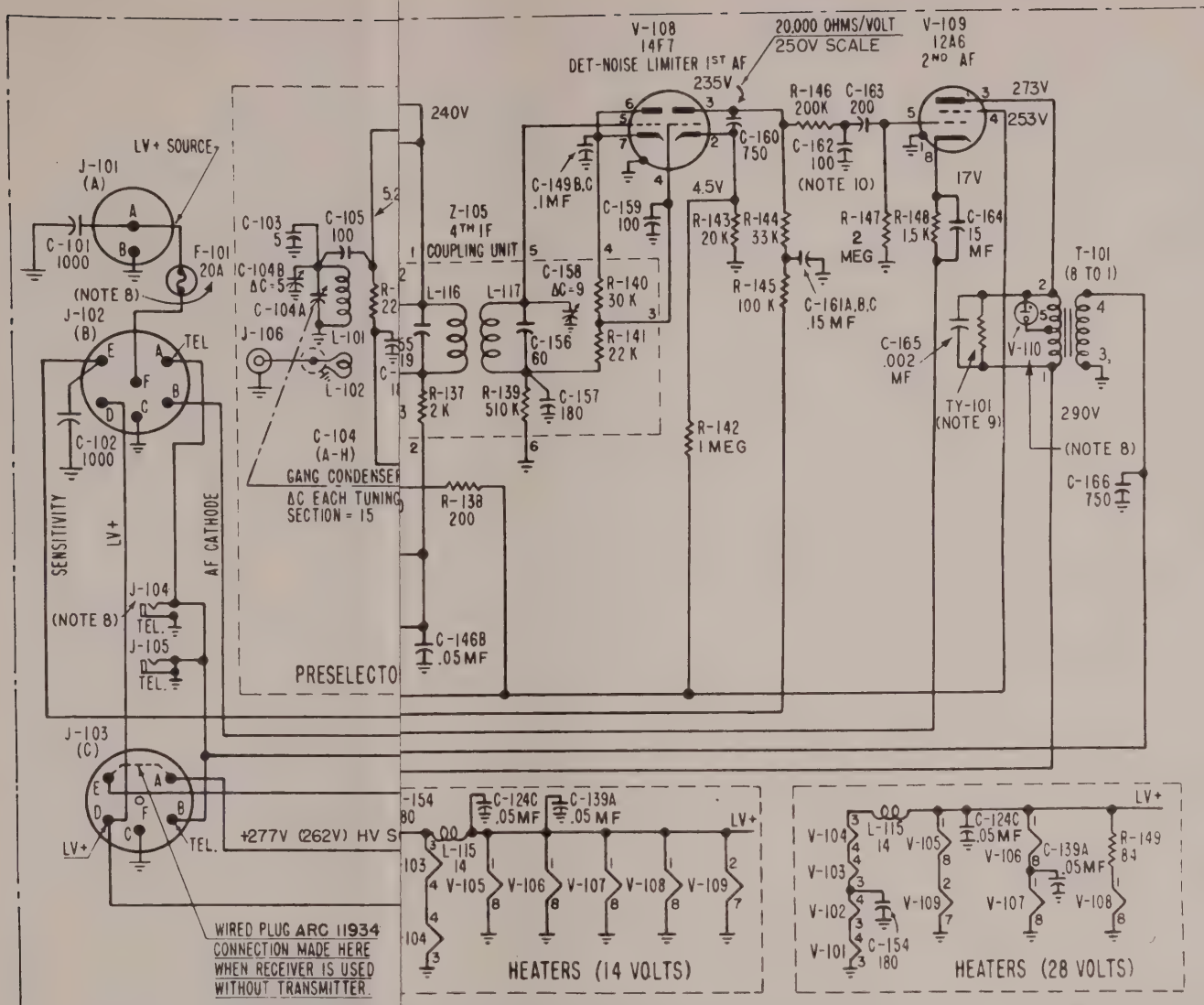
Figure 4-6. Radio Receiver ARC Type R-



NOTES:

1. CONNECTIONS ARE SHOWN TO WIRED SIDE OF CONNECTORS.
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS FOLLOWED BY "MF"-MICROFARAD.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K"-KILOHM (1,000 OHMS) OR "MEG"-MEGOHM (1,000,000 OHMS).
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS FOLLOWED BY "MH"-MILLIHENRY (1,000 MICROHENRIES) OR "H"-HENRY.
5. A "SHORT" ANTENNA IS DEFINED AS ONE HAVING AN EFFECTIVE CAPACITANCE OF 21-50 MMF AND A "LONG" ONE AS 50 MMF OR GREATER. BEGINNING WITH SERIAL NO. 530 OF R-11A (14V) AND SERIAL NO. 1405 OF R-11A (28V) "A" ANTENNA TERMINAL POST CONNECTION WAS DELETED AND "E" ANTENNA TERMINAL POST WAS MARKED "A".
6. DC VOLTAGE VALUES ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING CONDITIONS:
 - A. HIGH VOLTAGE SUPPLIED BY D-10A DYNAMOTOR. IF D-10 DYNAMOTOR IS USED VOLTAGES WILL BE APPROXIMATELY 10% LESS.
 - B. LV+ AT TERMINAL 2 OF J-602 SET AT 13.5 VOLTS (FOR 14V RECEIVER) OR 27 VOLTS (FOR 28V RECEIVER) BY ADJUSTMENT OF LV+ SOURCE.
 - C. SENSITIVITY LINE, TERMINAL E OF J-603 GROUNDED; NO SIGNAL INPUT.
 - D. 20,000 OHMS-PER-VOLT OR 1,000 OHMS-PER-VOLT VOLTMEETER USED, UNLESS OTHERWISE INDICATED.
 - E. ALL VOLTAGES ARE APPROXIMATE. VOLTAGES IN PARENTHESES ARE THOSE OBTAINED WHEN DYNAMOTOR ALSO POWER TO A TRANSMITTER CONNECTED TO J-606; NO RECEIVER DRAIN.
 - F. NEGATIVE TERMINAL OF VOLTMEETER GROUNDED TO CHASSIS.
7. THE I-F IS 85 KC. ALL THE I-F TRIMMER CAPACITORS HAVE A ΔC OF 17 MMF.
8. EACH TUNING SECTION OF C-604 HAS A ΔC OF 346 MMF. EACH TRIMMER HAS A ΔC OF 16 MMF.
9. REFER TO PARAGRAPH 1-19.
10. DELETED BEGINNING WITH SERIAL NO. 530 OF R-11A (14V) AND SERIAL NO. 1405 OF R-11A (28V).
11. ADDED BEGINNING WITH SERIAL NO. 530 OF R-11A (14V) AND SERIAL NO. 1405 OF R-11A (28V).
12. VALUE CHANGED TO 60 MMF BEGINNING WITH SERIAL NO. 530 OF R-11A (14V) AND SERIAL NO. 1405 OF R-11A (28V).

Figure 4-6. Radio Receiver ARC Type R-11A(14v) and Type R-11A(28v), Schematic Diagram

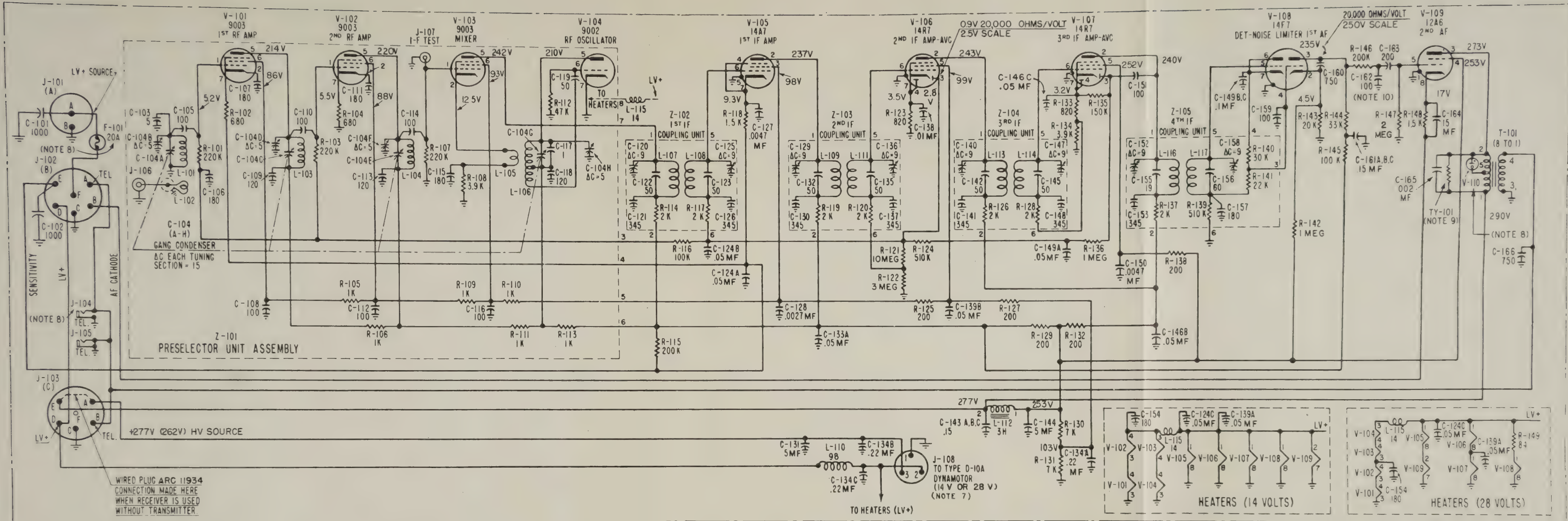


EN UNDER THE FOLLOWING CONDITIONS:
FOR 14V RECEIVER) OR 27 VOLTS (FOR 28V RECEIVER) BY ADJUSTMENT

NOTES:

- NOTES:
1. CONNECTIONS ARE SHOWN
 2. CAPACITOR VALUES ARE IN M
 3. RESISTOR VALUES ARE IN OHMS .
 4. INDUCTOR VALUES ARE IN M
"H" - HENRY.
 5. THE IF IS 15 MC. THE RF OS

Figure 4-7. Radio Rec



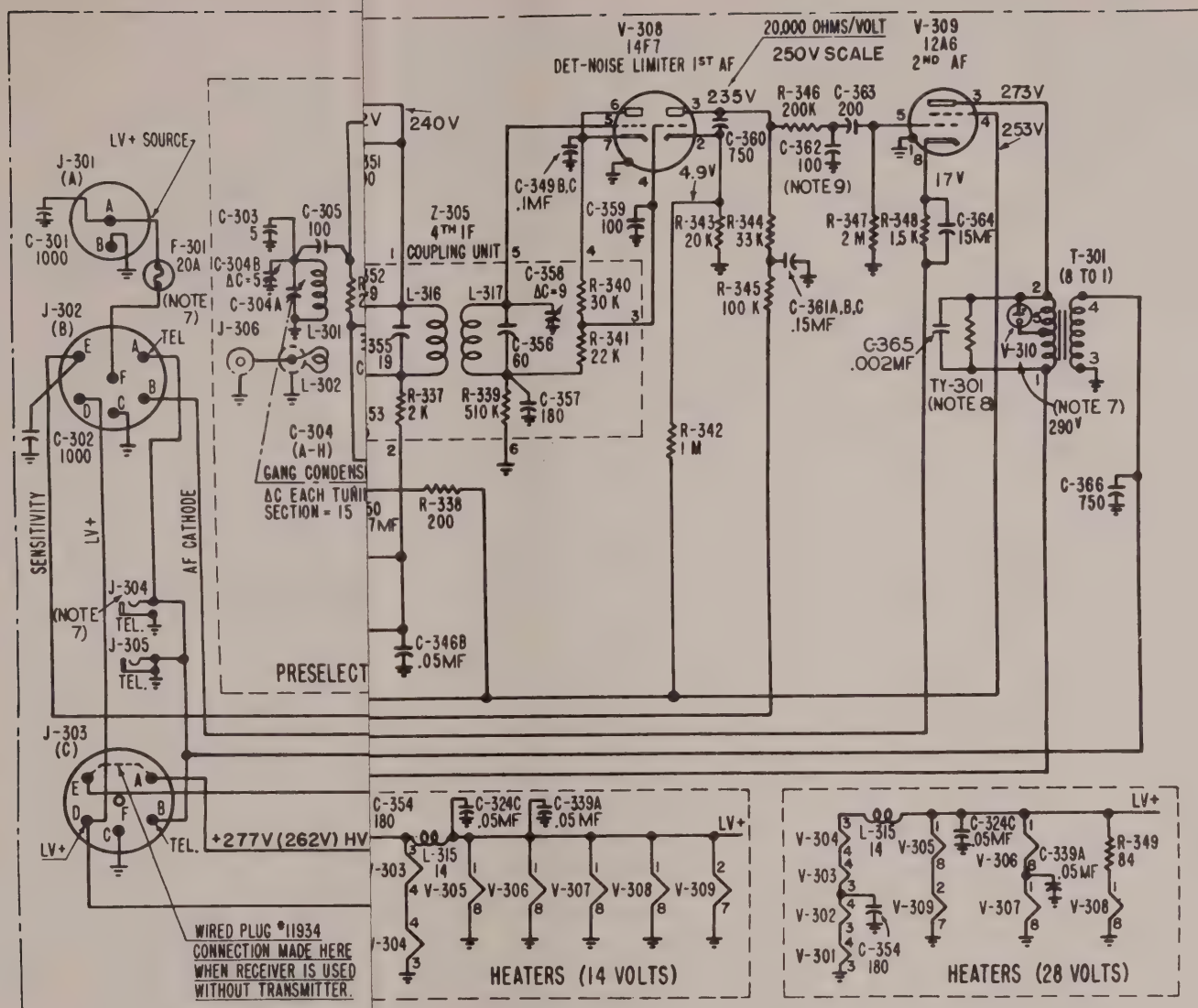
NOTES:

1. CONNECTIONS ARE SHOWN TO WIRED SIDE OF CONNECTORS.
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS FOLLOWED BY "MF" - MICROFARAD.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K" - KILOHM (1,000 OHMS) OR "MEG" - MEGOHM (1,000,000 OHMS).
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS FOLLOWED BY "MH" - MILLIHENRY (1,000 MICROHENRIES) OR "H" - HENRY.
5. THE IF IS 15 MC. THE RF OSCILLATOR FREQUENCY IS 15 MC LESS THAN THE RF SIGNAL FREQUENCY.

6. D-C VOLTAGES SHOWN ARE APPROXIMATE AND TAKEN UNDER THE FOLLOWING CONDITIONS:

- A. LV+ AT TERMINAL "2" OF J-108 SET AT 13.5 VOLTS (FOR 14V RECEIVER) OR 27 VOLTS (FOR 28V RECEIVER) BY ADJUSTMENT OF LV+ SOURCE.
 - B. AF CATHODE LINE, TERMINAL "B" OF J-102, GROUND.
 - C. SENSITIVITY LINE, TERMINAL "E" OF J-102, GROUND; NO SIGNAL INPUT
 - D. 20,000 OHMS-PER-VOLT OR 1,000 OHMS-PER-VOLT VOLTMEETER USED, UNLESS OTHERWISE INDICATED
 - E. ALL VOLTAGES ARE APPROXIMATE AND ARE MEASURED USING A D-10A DYNAMOTOR AS THE HIGH VOLTAGE SUPPLY. WHEN A D-10 DYNAMOTOR IS USED VALUES WILL BE APPROXIMATELY 10% LESS. VALUES IN PARENTHESES ARE THOSE OBTAINED WHEN DYNAMOTOR SUPPLIES POWER TO TRANSMITTER CONNECTED TO J-103; NO RECEIVER DRAIN.
 - F. NEGATIVE TERMINAL OF VOLTMEETER GROUND TO CHASSIS.
7. REFER TO PARAGRAPH 1-19.
 8. DELETED BEGINNING WITH SERIAL NO.700 OF R-15 (14V) AND SERIAL NO.1061 OF R-15 (28V).
 9. ADDED BEGINNING WITH SERIAL NO.700 OF R-15 (14V) AND SERIAL NO.1061 OF R-15 (28V).
 10. VALUE CHANGED TO 300MMF BEGINNING WITH SERIAL NO.700 OF R-15 (14V) AND SERIAL NO.1061 OF R-15 (28V).

Figure 4-7. Radio Receiver ARC Type R-15(14v) and Type R-15 (28v), Schematic Diagram

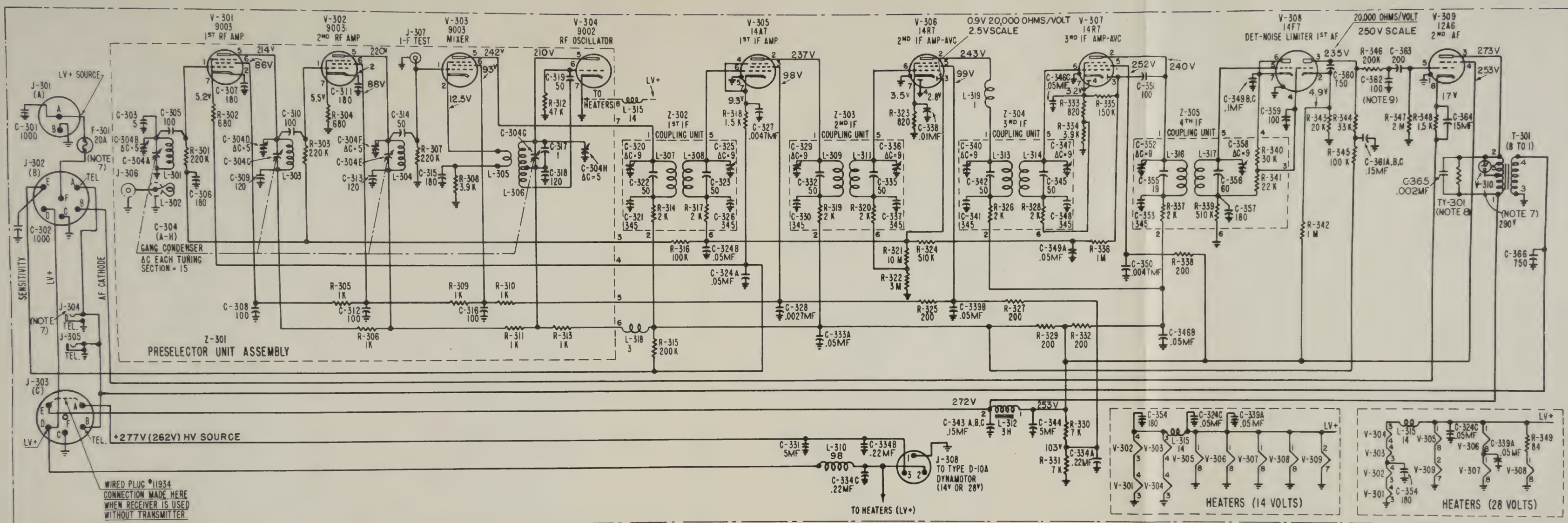


NOTES

1. CONNECTIONS ARE SHOWN
2. CAPACITOR VALUES ARE IN
3. RESISTOR VALUES ARE IN
(1,000,000 OHMS).
4. INDUCTOR VALUES ARE IN
"H"-HENRY.
5. THE IF IS 15 MC. THE RF OS
- LOWING CONDITIONS:
OR 27 VOLTS (FOR 28V RECEIVER) BY
PUT.
A DYNAMOTOR AS THE HIGH VOLTAGE SUPPLY.
10% LESS. VALUES IN PARENTHESES ARE
ER CONNECTED TO J-303; NO RECEIVER DRAIN.

80 OF R-19 (28V)
80 OF R-19 (28V)
14V) AND SERIAL NO.780 OF R-19 (28V).

Figure 4-7A. Radio

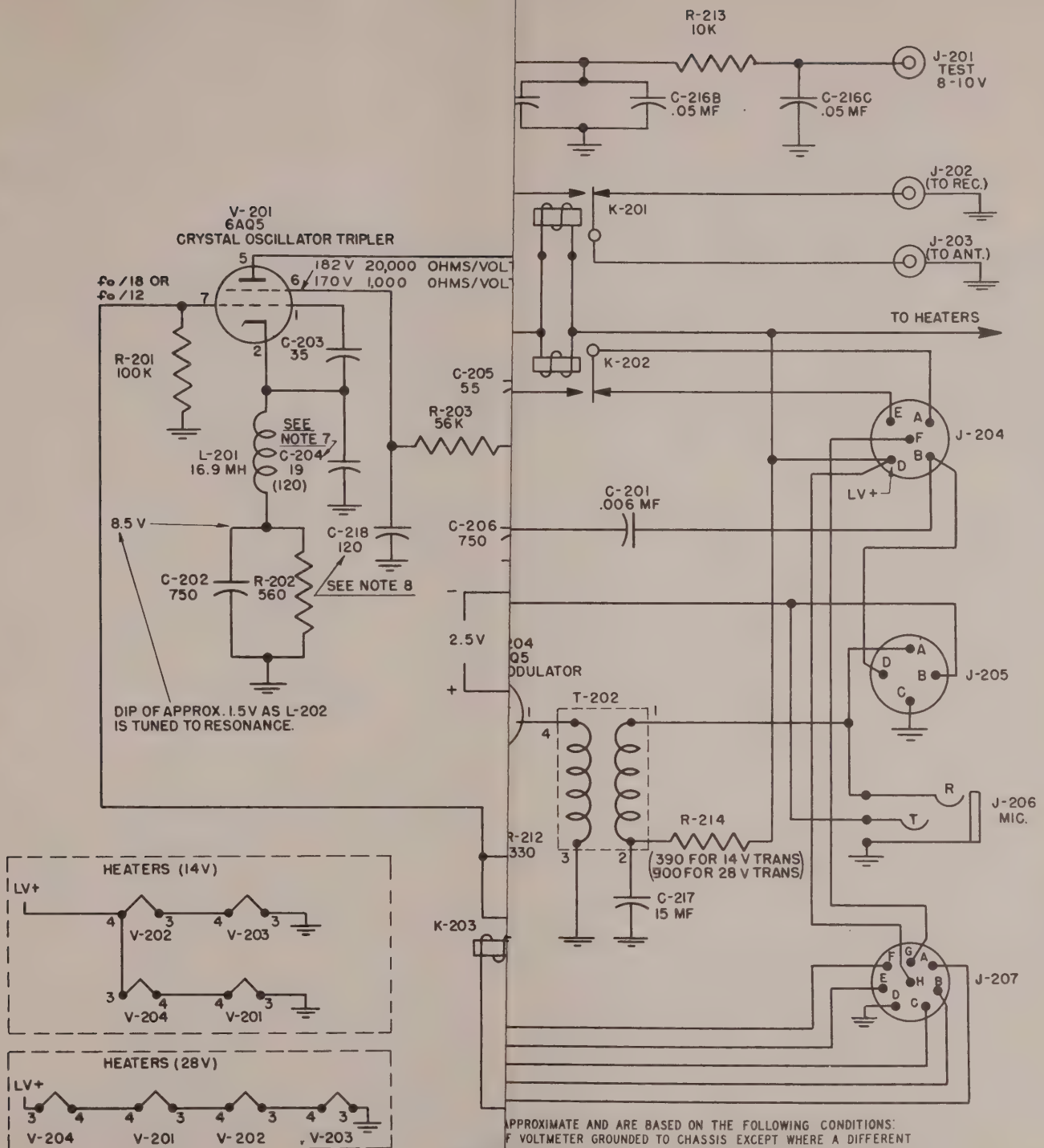


NOTES

1. CONNECTIONS ARE SHOWN TO WIRED SIDE OF CONNECTORS.
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS FOLLOWED BY "MF"-MICROFARAD.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K"-KILOHM (1,000 OHMS) OR "MEG"-MEGOHM (1,000,000 OHMS).
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS FOLLOWED BY "MH"-MILLIHENRY (1,000 MICROHENRIES) OR "H"-HENRY.
5. THE IF IS 15 MC. THE RF OSCILLATOR FREQUENCY IS 15 MC LESS THAN THE RF SIGNAL FREQUENCY.

6. D-C VOLTAGES SHOWN ARE APPROXIMATE AND TAKEN UNDER THE FOLLOWING CONDITIONS:
A. LV+ AT TERMINAL "2" OF J-308 SET AT 13.5 VOLTS (FOR 14V RECEIVER) OR 27 VOLTS (FOR 28V RECEIVER) BY ADJUSTMENT OF LVT SOURCE.
B. AF CATHODE LINE, TERMINAL "B" OF J-302, GROUNDING.
C. SENSITIVITY LINE, TERMINAL "E" OF J-302, GROUNDING; NO SIGNAL INPUT.
D. 20,000 OHMS-PER-VOLT OR 1,000 OHMS-PER-VOLT VOLTMETER.
7. DELETED BEGINNING WITH SERIAL NO. 51 OF R-19 (14V) AND SERIAL NO. 780 OF R-19 (28V).
8. ADDED BEGINNING WITH SERIAL NO. 51 OF R-19 (14V) AND SERIAL NO. 780 OF R-19 (28V).
9. VALUE CHANGED TO 300 MMF BEGINNING WITH SERIAL NO. 51 OF R-19 (14V) AND SERIAL NO. 780 OF R-19 (28V).

Figure 4-7A. Radio Receiver ARC Type R-19(14v) and Type R-19(28v), Schematic Diagram



APPROXIMATE AND ARE BASED ON THE FOLLOWING CONDITIONS:
VOLTAGE: VOLTAGE MEASURED WITH VOLTAGE METER GROUND TO CHASSIS EXCEPT WHERE A DIFFERENT IS SPECIFIED.

VAL OF TYPE D-10A DYNAMOTOR ON RECEIVER SET AT 13.5 VOLTS
R) OR 27 VOLTS (FOR 28V TRANSMITTER).

-VOLT: EITHER 1,000 OR 20,000 EXCEPT WHERE SPECIFICALLY

USED IN 14-VOLT EQUIPMENT BEGINNING WITH SERIAL NO. 1001, AND IN 28-VOLT
TH SERIAL NO. 701.

-VOLT EQUIPMENT BEGINNING WITH SERIAL NO. 1001, AND IN 28-VOLT EQUIPMENT
NO. 701.

Figure 4-8. Radio Transmitter ARC Type

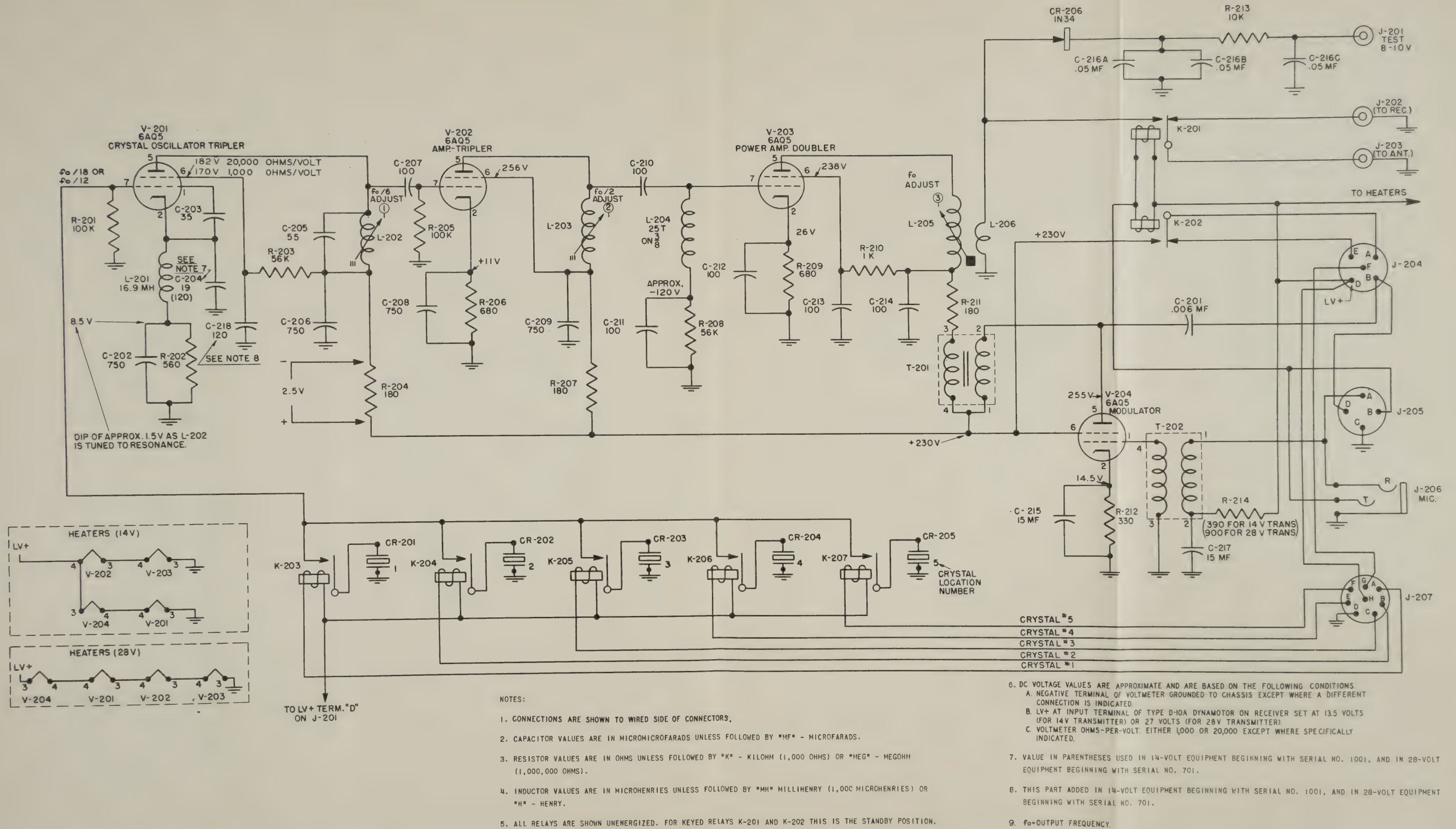


Figure 4-8. Radio Transmitter ARC Type T-11A(14v) and Type T-11A(28v), Schematic Diagram

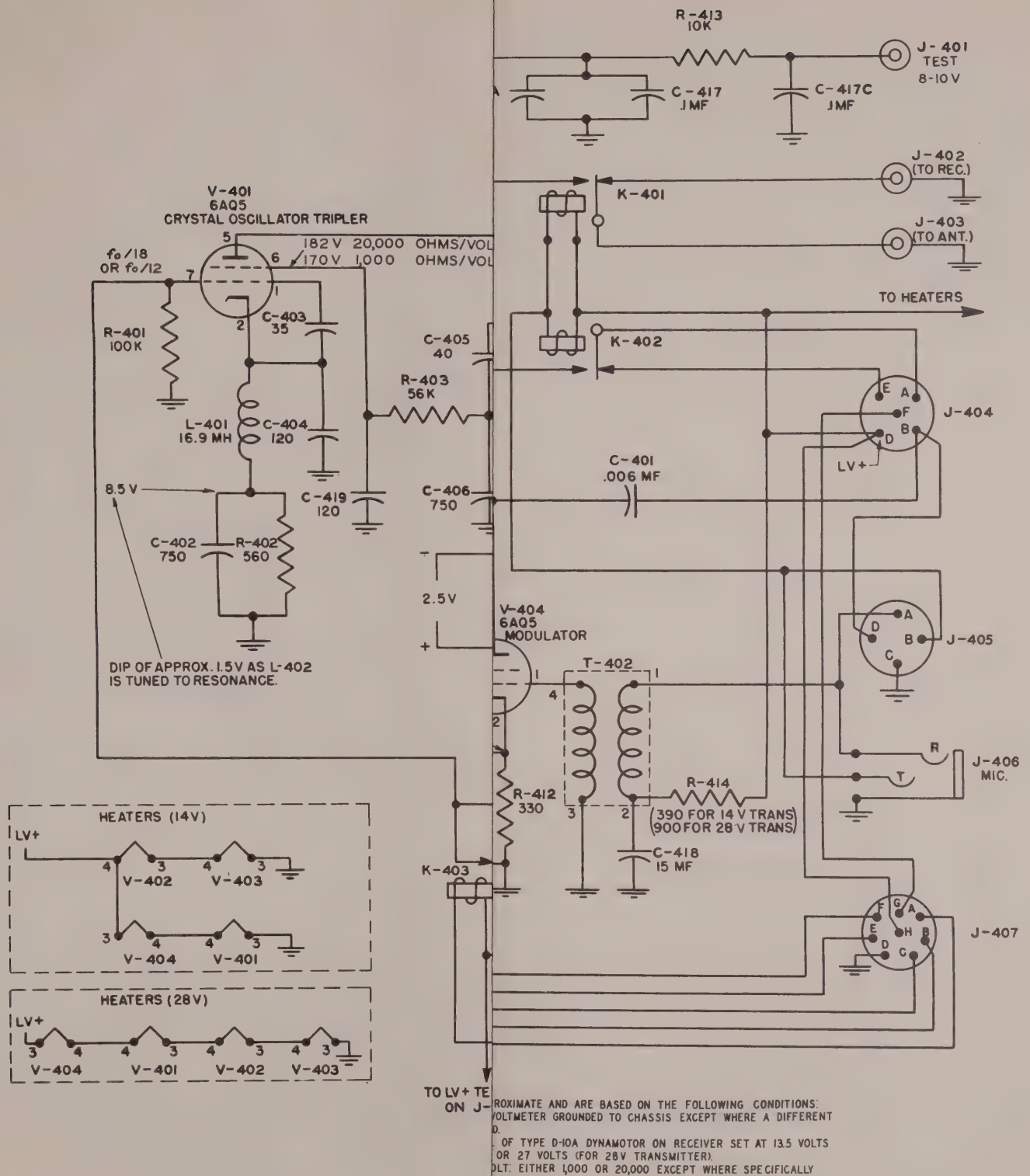


Figure 4-8A. Radio Transmitter ARC T

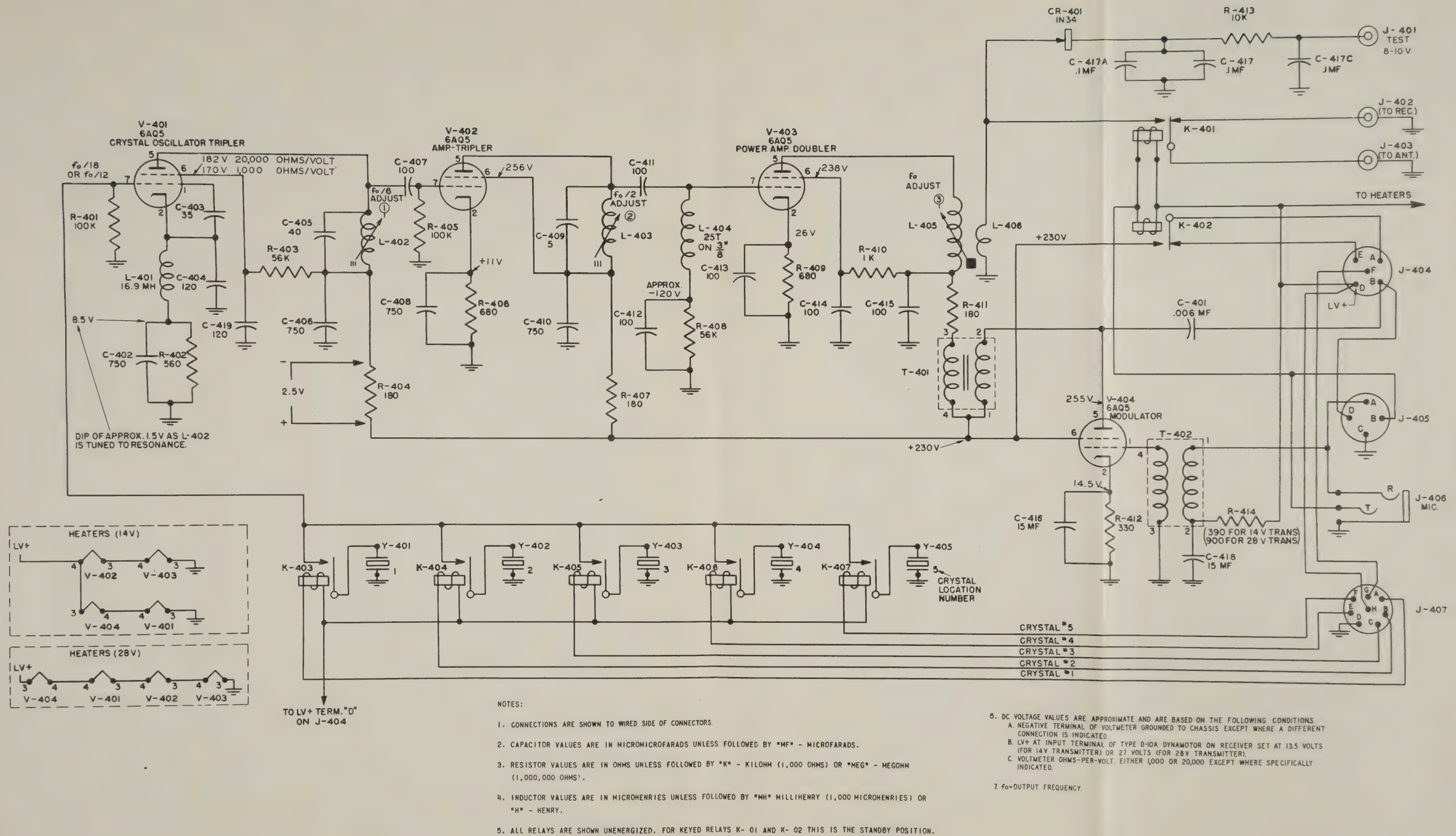
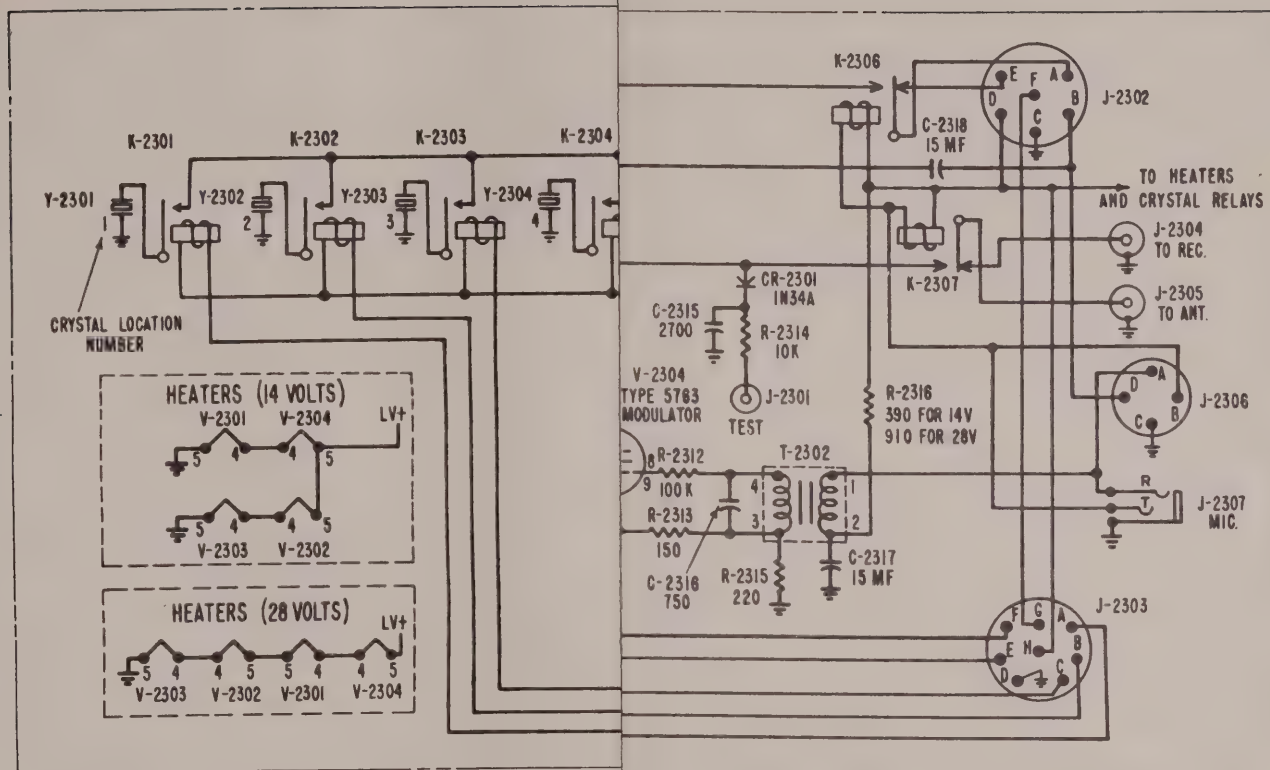


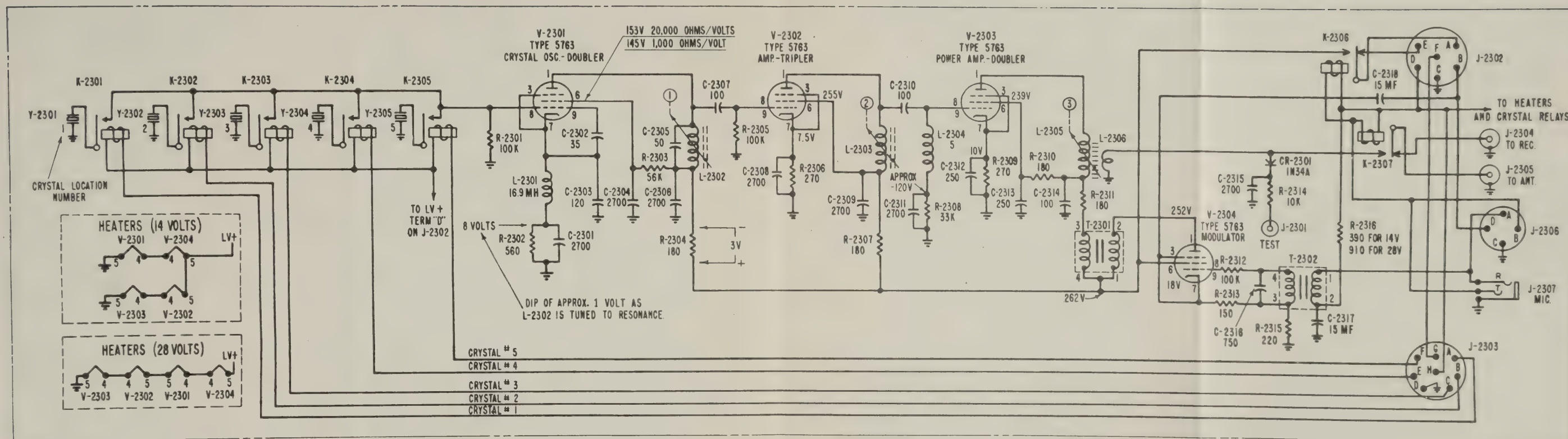
Figure 4-8A. Radio Transmitter ARC Type T-13(14v) and Type T-13(28v), Schematic diagram



NOTES:

1. CONNECTIONS ARE SHOWN TO WIRED SIDE OF RELAYS K-2306 AND K-2307 THIS IS THE
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS OTHERWISE SPECIFIED ON THE FOLLOWING CONDITIONS:
TO CHASSIS EXCEPT WHERE A DIFFERENTIAL IS SPECIFIED.
3. RESISTOR VALUES ARE IN OHMS UNLESS OTHERWISE SPECIFIED (1,000,000 OHMS).
RESISTOR ON RECEIVER SET AT 13.5 VOLTS (TRANSMITTER).
1,000,000 EXCEPT WHERE SPECIFICALLY
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS OTHERWISE SPECIFIED (MICROHENRIES) OR "H" - HENRY.

Figure 4-8B. Radio Transmitter ARC Type



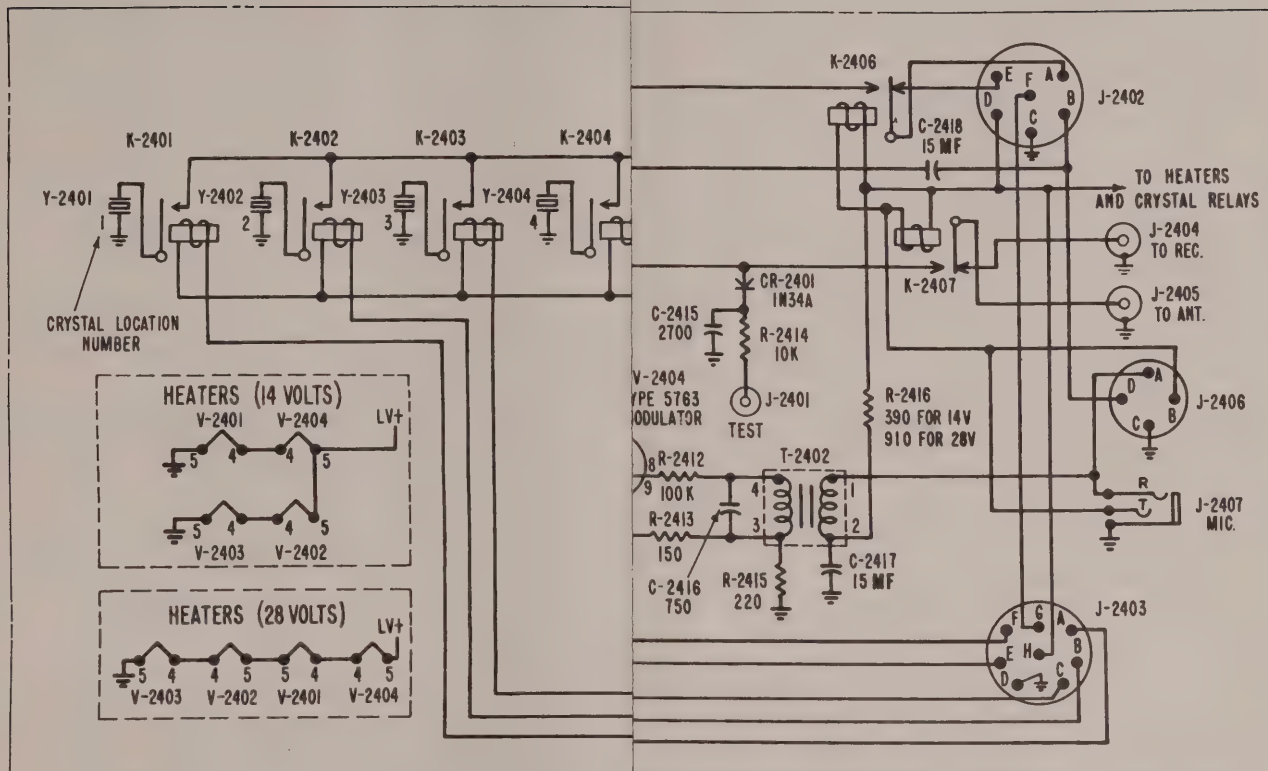
NOTES:

1. CONNECTIONS ARE SHOWN TO WIRED SIDE OF CONNECTORS.
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS FOLLOWED BY "MF" - MICROFARADS.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K" - KILOHM (1,000 OHMS) OR "MEG" - MEGOHM (1,000,000 OHMS).
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS FOLLOWED BY "MH" - MILLIHENRY (1,000 MICROHENRIES) OR "H" - HENRY.

5. ALL RELAYS ARE SHOWN UNENERGIZED. FOR KEYED RELAYS K-2306 AND K-2307 THIS IS THE STANDBY POSITION.
6. DC VOLTAGE VALUES ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING CONDITIONS:
 - A. NEGATIVE TERMINAL OF VOLTMEETER GROUNDED TO CHASSIS EXCEPT WHERE A DIFFERENT CONNECTION IS INDICATED.
 - B. LV+ AT INPUT TERMINAL OF TYPE D-10A DYNAMOTOR ON RECEIVER SET AT 13.5 VOLTS (FOR 14V TRANSMITTER) OR 27 VOLTS (FOR 28V TRANSMITTER).
 - C. VOLTMEETER OHMS-PER-VOLT: EITHER 1,000 OR 20,000 EXCEPT WHERE SPECIFICALLY INDICATED.

7. f_o = OUTPUT FREQUENCY.

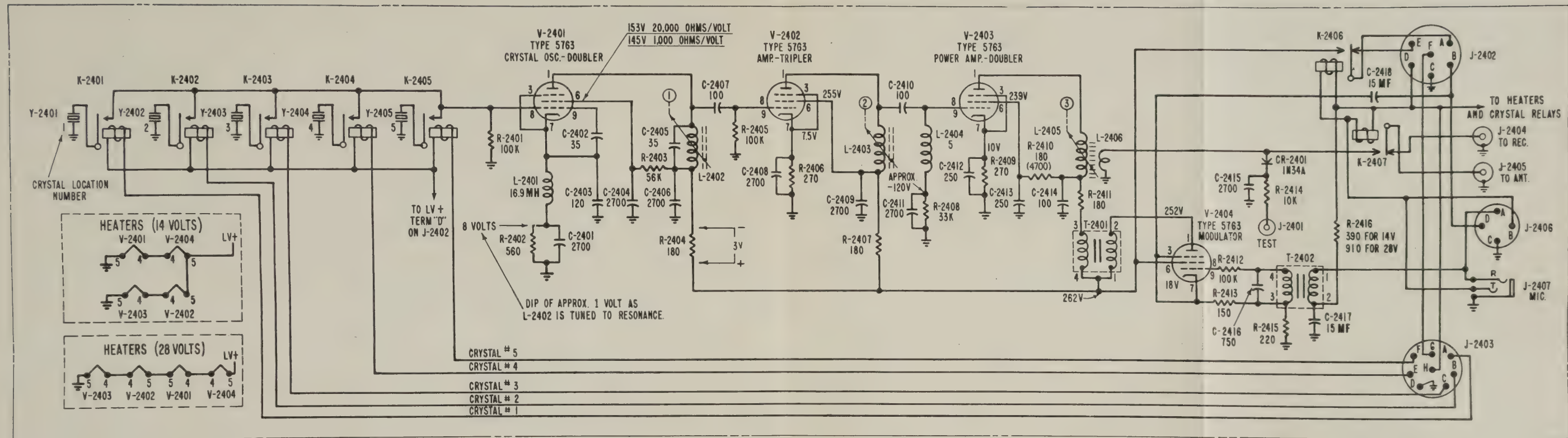
Figure 4-8B. Radio Transmitter ARC Type T-11B(14v) and Type T-11B(28v), Schematic Diagram



NOTES:

1. CONNECTIONS ARE SHOWN TO THE WIRED SIDE OF THE RELAY ON RECEIVER SET AT 13.5 VOLTS (TRANSMITTER).
2. CAPACITOR VALUES ARE IN MICROMICROFARADS EXCEPT WHERE SPECIFICALLY NOTED.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K" FOR KILOHMS, "M" FOR MEGOHM (1,000,000 OHMS), OR "H" FOR HENRY.
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS SPECIFICALLY NOTED (HENRY).
5. ALL RELAYS ARE SHOWN UNENERGIZED. FOR RECEIVER SET AT 13.5 VOLTS (TRANSMITTER).

Figure 4-8C. Radio Transmitter ARC Type T



NOTES:

1. CONNECTIONS ARE SHOWN TO THE WIRED SIDE OF CONNECTORS.
2. CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS FOLLOWED BY "MF" - MICROFARADS.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K" - KILOHM (1,000 OHMS) OR "MEG" - MEGOHM (1,000,000 OHMS).
4. INDUCTOR VALUES ARE IN MICROHENRIES UNLESS FOLLOWED BY "MH" - MILLIHENRY (1,000 MICROHENRIES) OR "H" - HENRY.
5. ALL RELAYS ARE SHOWN UNENERGIZED. FOR KEYED RELAYS K-2406 AND K-2407 THIS IS STANDBY POSITION.
6. DC VOLTAGE VALUES ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING CONDITIONS:
 - A. NEGATIVE TERMINAL OF VOLTMETER GROUNDED TO CHASSIS EXCEPT WHERE A DIFFERENT CONNECTION IS INDICATED.
 - B. LV+ AT INPUT TERMINAL OF TYPE D-10A DYNAMOTOR ON RECEIVER SET AT 13.5 VOLTS (FOR 14V TRANSMITTER) OR 27VOLTS (FOR 28V TRANSMITTER).
 - C. VOLTMETER OHMS-PER-VOLT: EITHER 1,000 OR 20,000 EXCEPT WHERE SPECIFICALLY INDICATED.
7. VALUE IN PARENTHESES USED IN 14-VOLT EQUIPMENT BEGINNING WITH SERIAL NO. 1001, AND IN 28-VOLT EQUIPMENT BEGINNING WITH SERIAL NO. 701.
8. f_o = OUTPUT FREQUENCY.

Figure 4-8C. Radio Transmitter ARC Type T-13A(14v) and Type T-13A(28v), Schematic Diagram

(1)

(1)

(1)

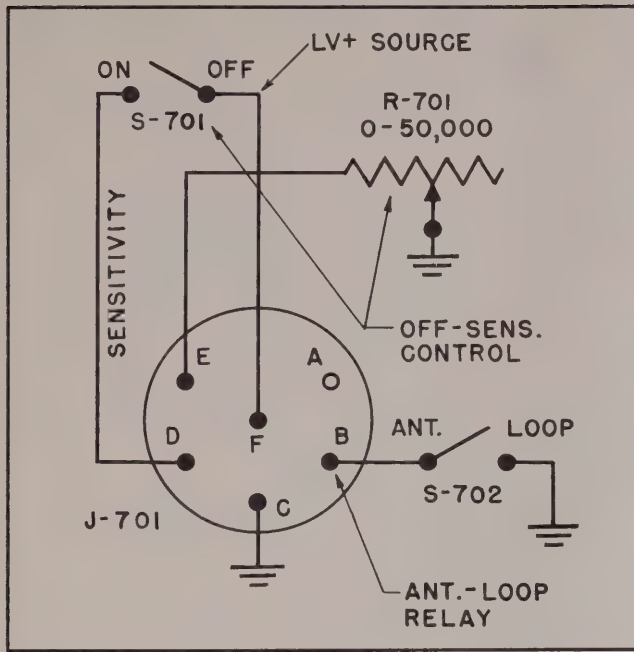


Figure 4-9. Control Unit ARC Type C-16, Schematic Diagram

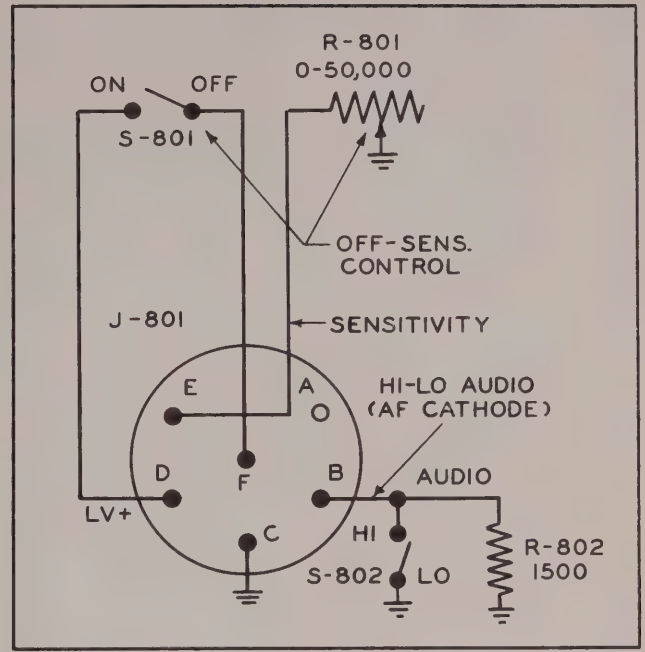


Figure 4-10. Control Unit ARC Type C-17, Schematic Diagram

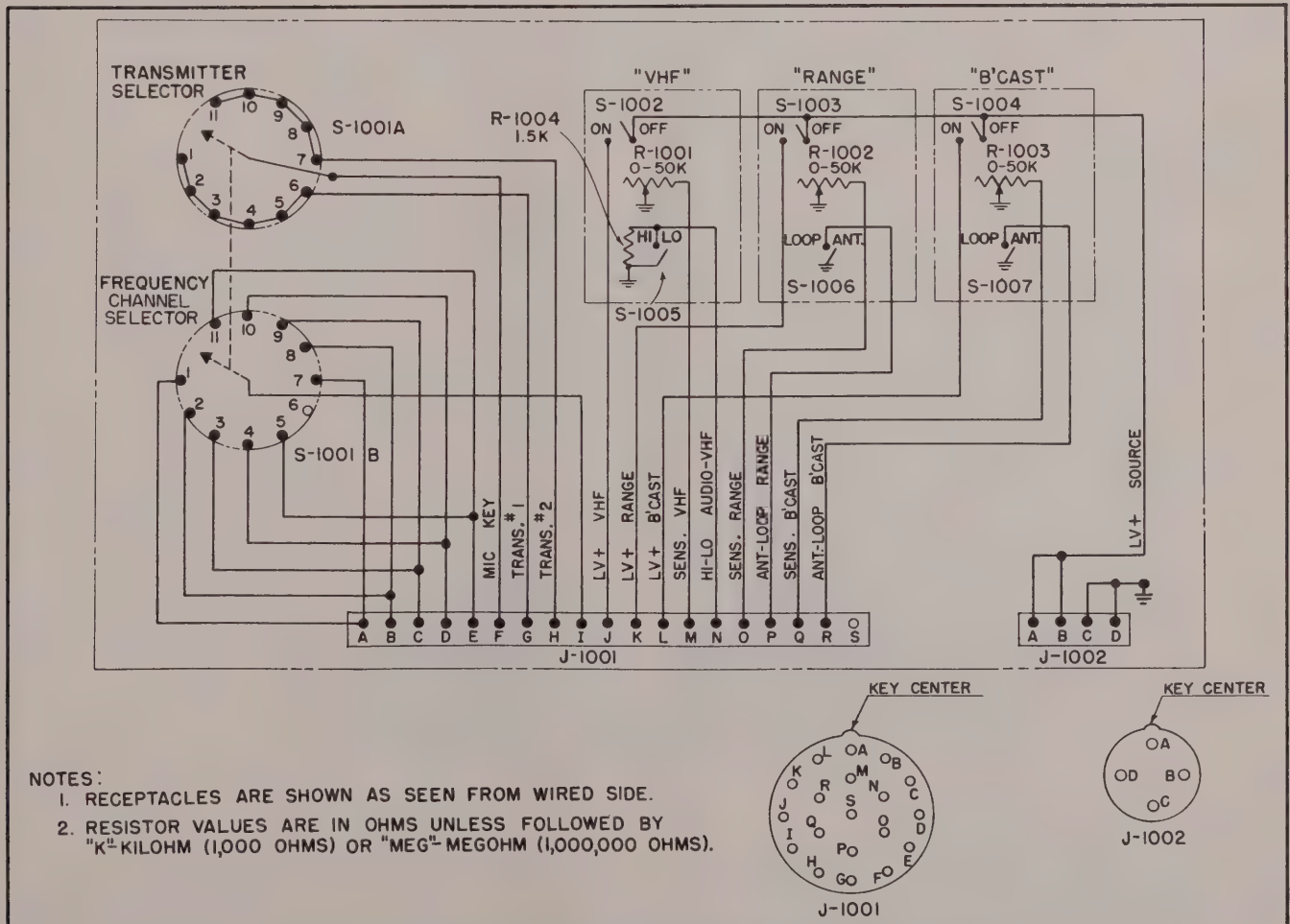


Figure 4-11. Control Unit ARC Type C-24, Schematic Diagram

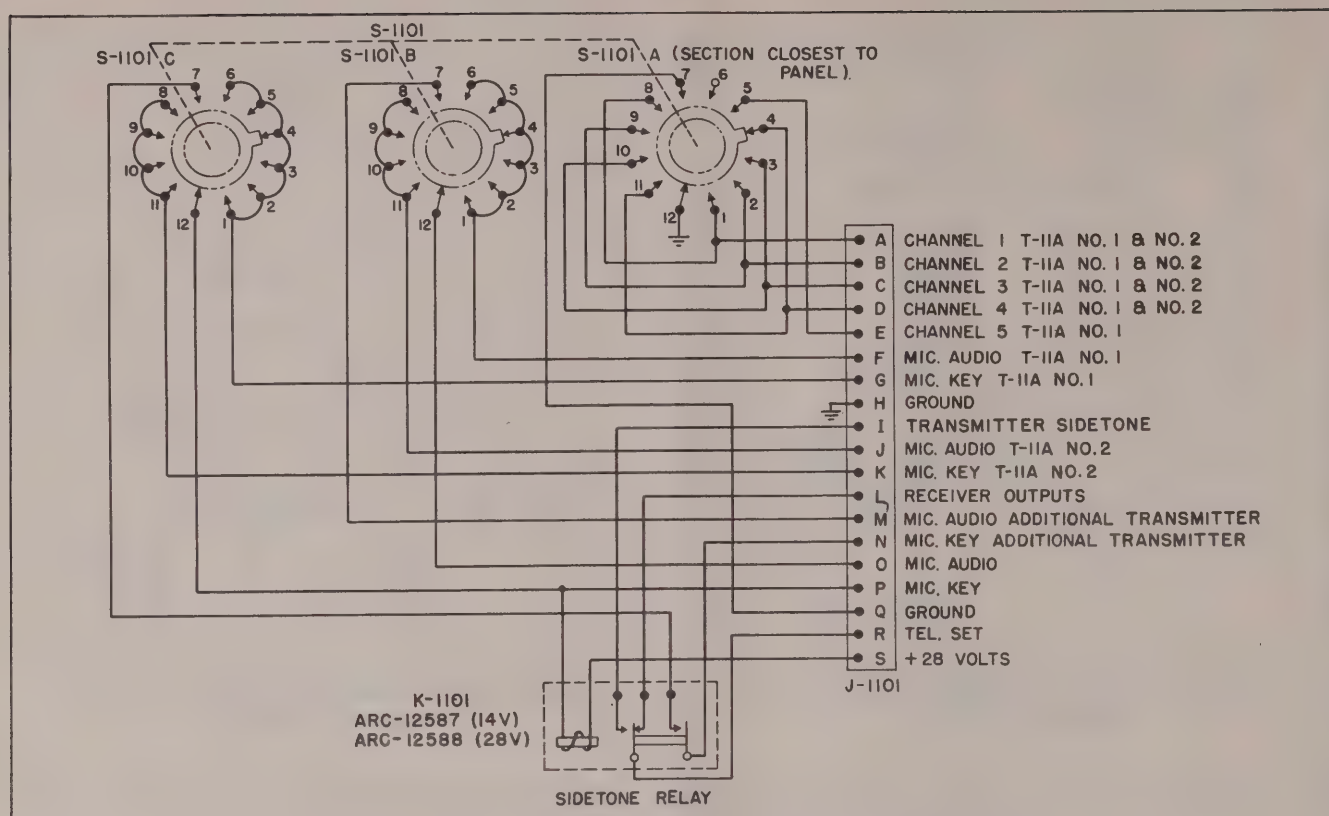


Figure 4-12. Control Unit ARC Type C-25, Schematic Diagram

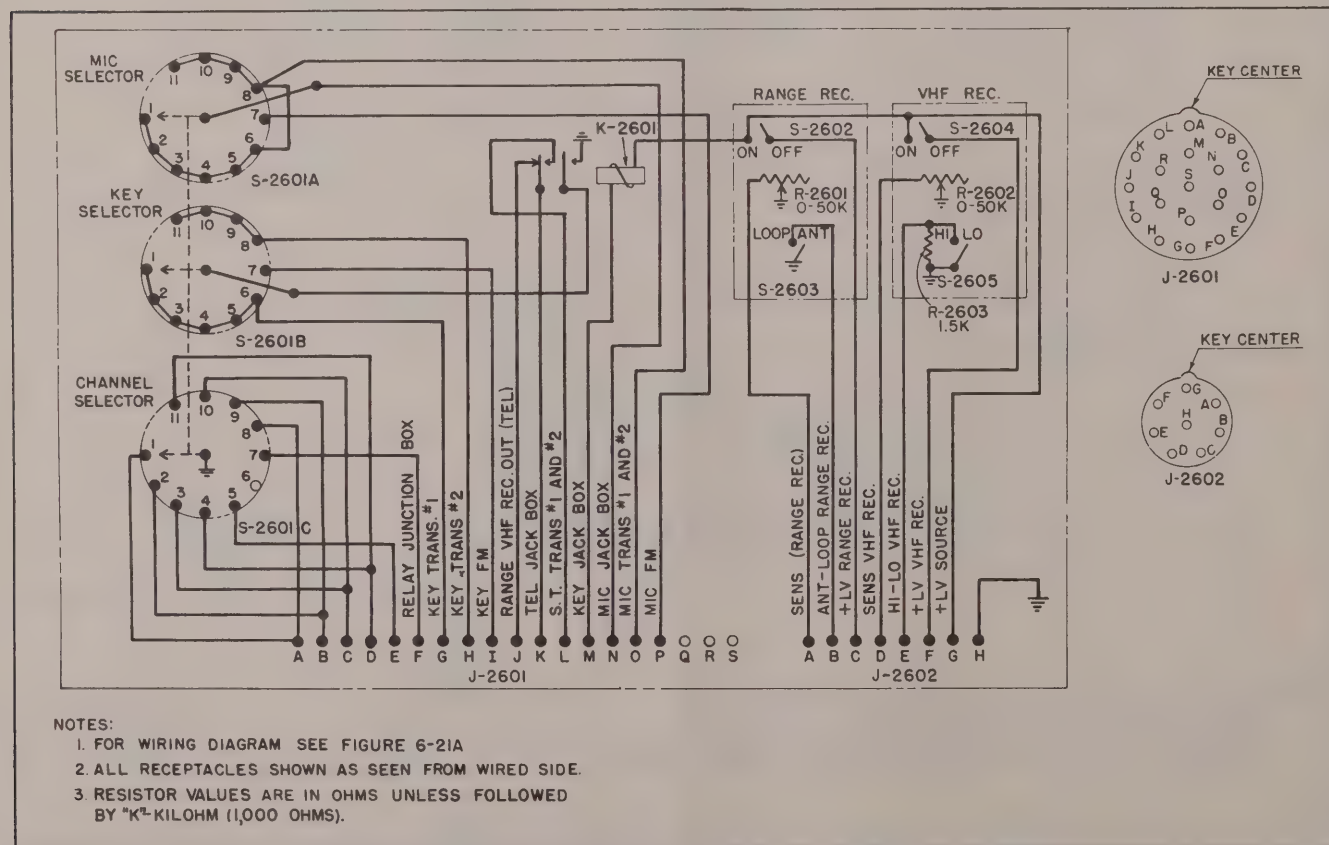
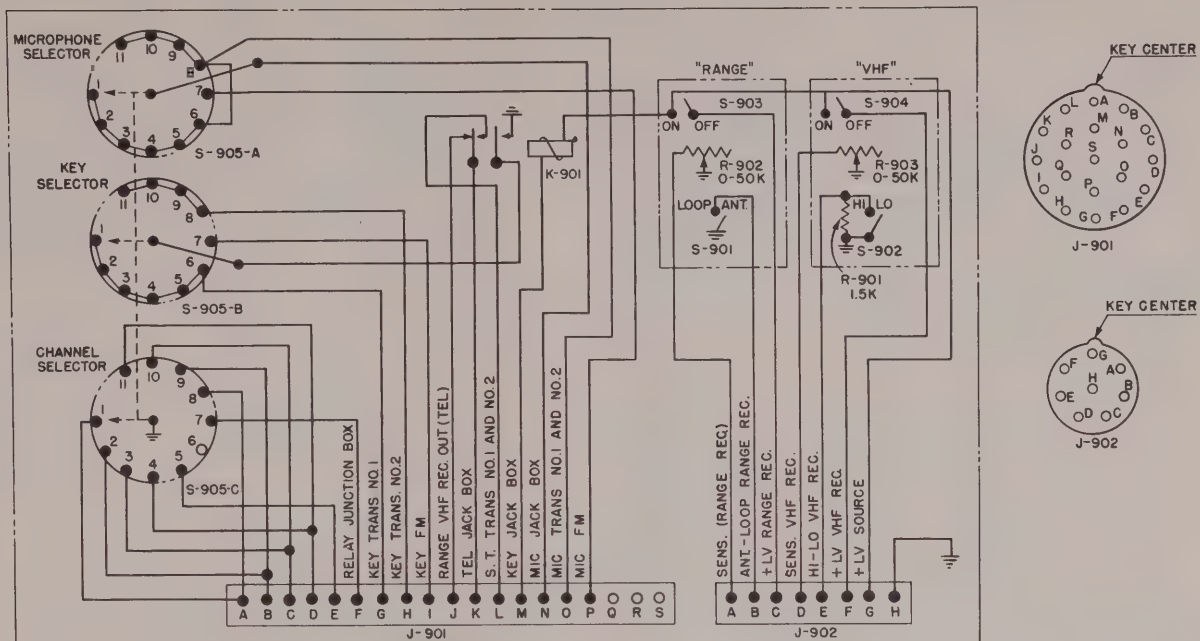


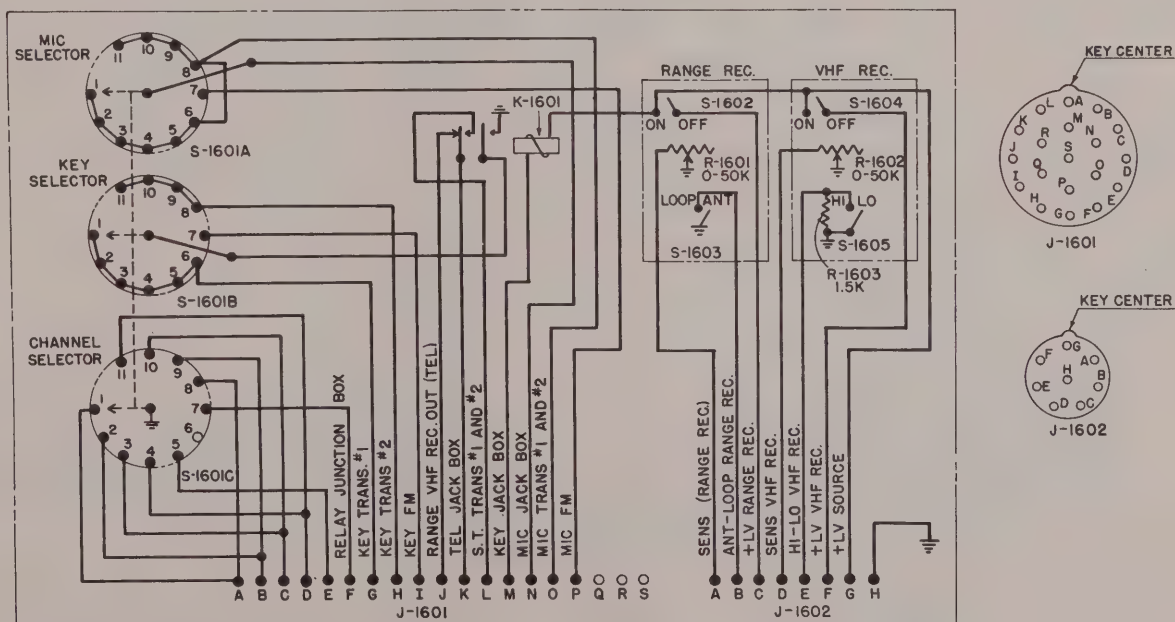
Figure 4-12A. Control Unit ARC Type C-36, Schematic Diagram



NOTES:

1. ALL RECEPTACLES SHOWN AS SEEN FROM WIRED SIDE.
2. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K"-KILOHM (1,000 OHMS)

Figure 4-12B. Control Unit ARC Type C-37, Schematic Diagram



NOTES:

1. FOR WIRING DIAGRAM SEE FIGURE 6-21C
2. ALL RECEPTACLES SHOWN AS SEEN FROM WIRED SIDE.
3. RESISTOR VALUES ARE IN OHMS UNLESS FOLLOWED BY "K"-KILOHM (1,000 OHMS).

Figure 4-12C. Control Unit ARC Type C-38, Schematic Diagram

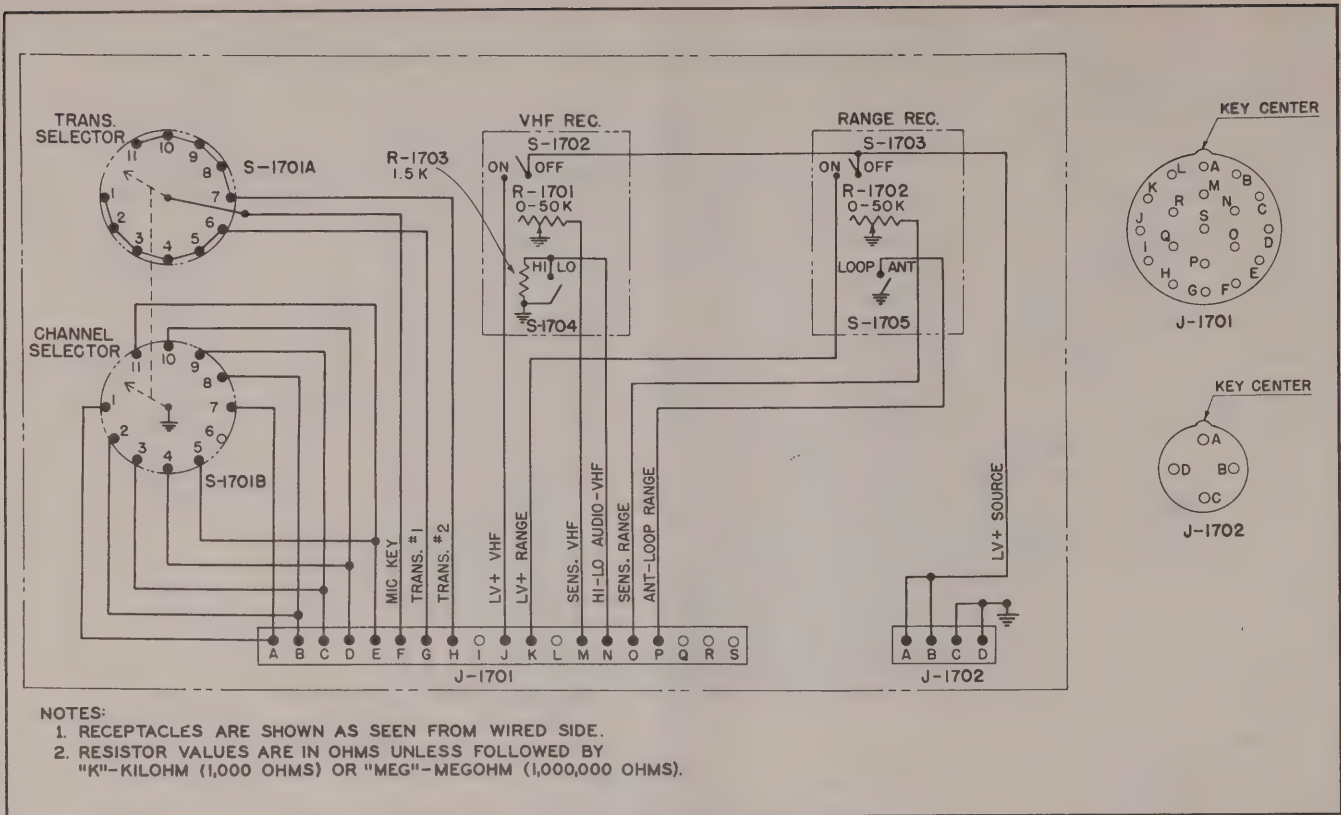


Figure 4-12D. Control Unit ARC Type C-39, Schematic Diagram

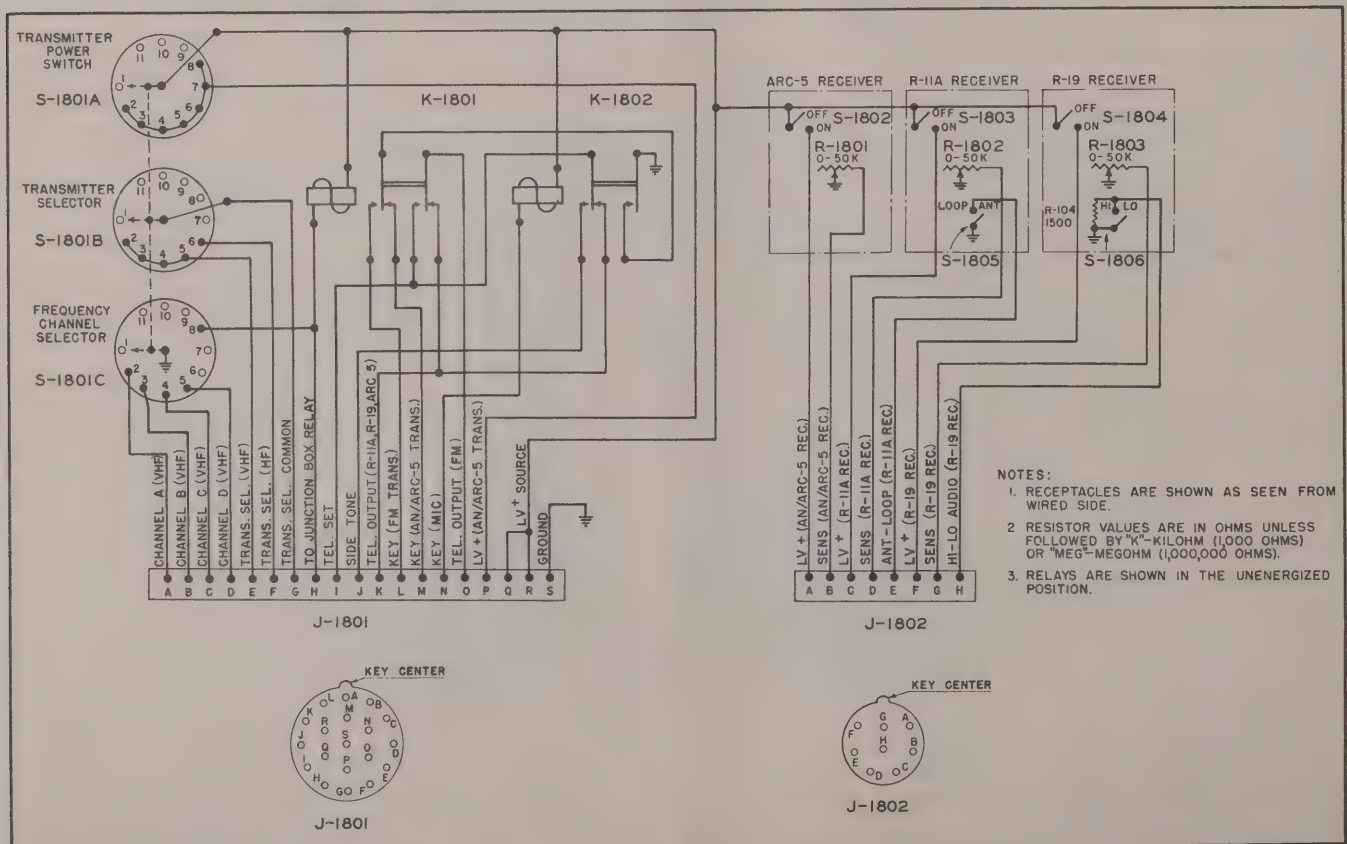


Figure 4-12E. Control Unit ARC Type C-40, Schematic Diagram

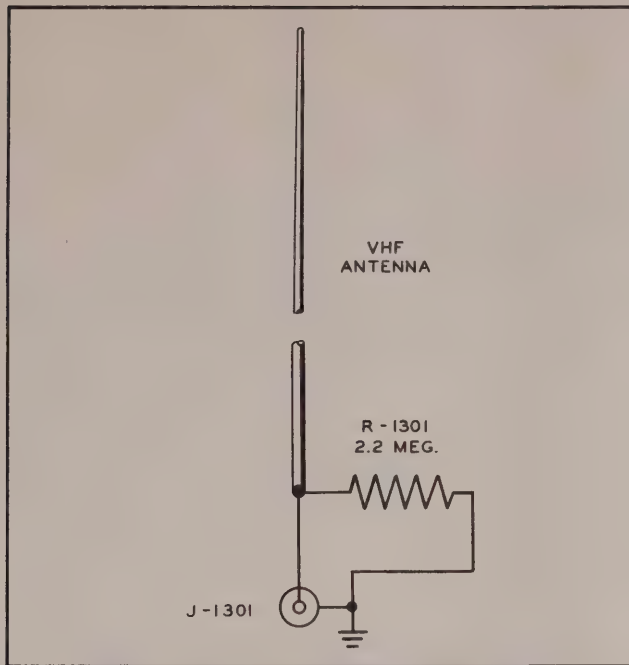


Figure 4-13. Antenna ARC Type A-12, Schematic Diagram

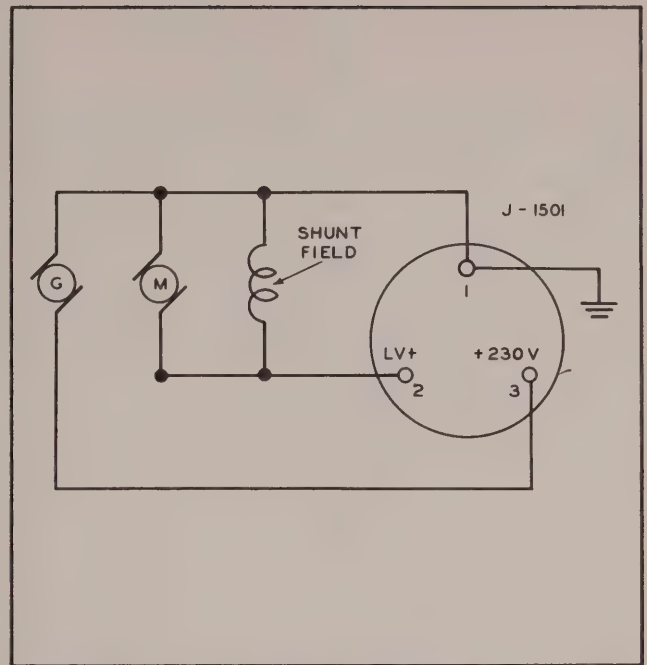


Figure 4-14. Dynamotor ARC Type D-10(14v) and Type D-10(28v), Schematic Diagram

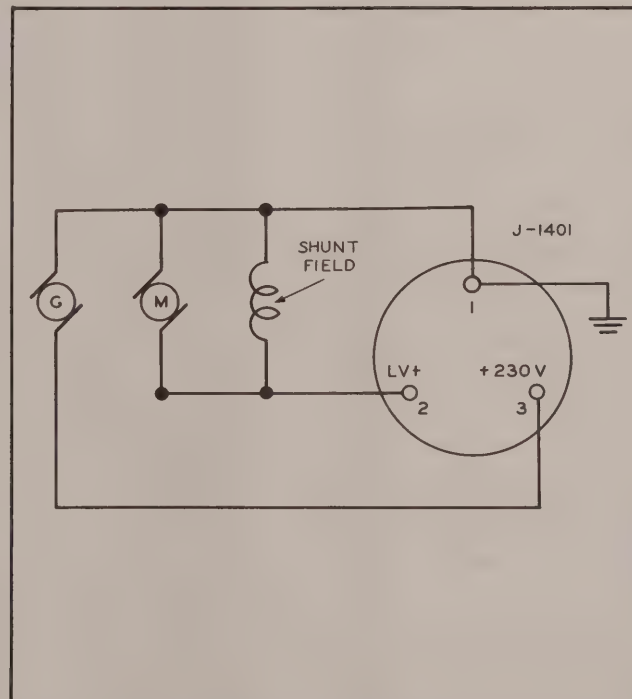
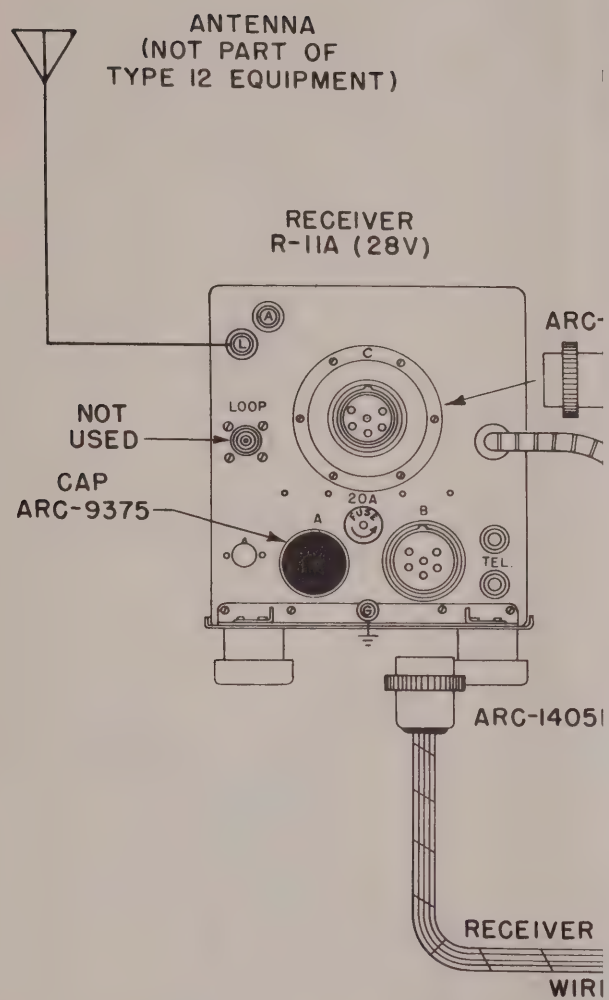


Figure 4-14A. Dynamotor ARC Type D-10A(14v) and Type D-10A(28v), Schematic Diagram



SWITCH CONTI
ASSEMBLY
ARC-I4049

Figure 4-15. Radio Set ARC Type 12, Model

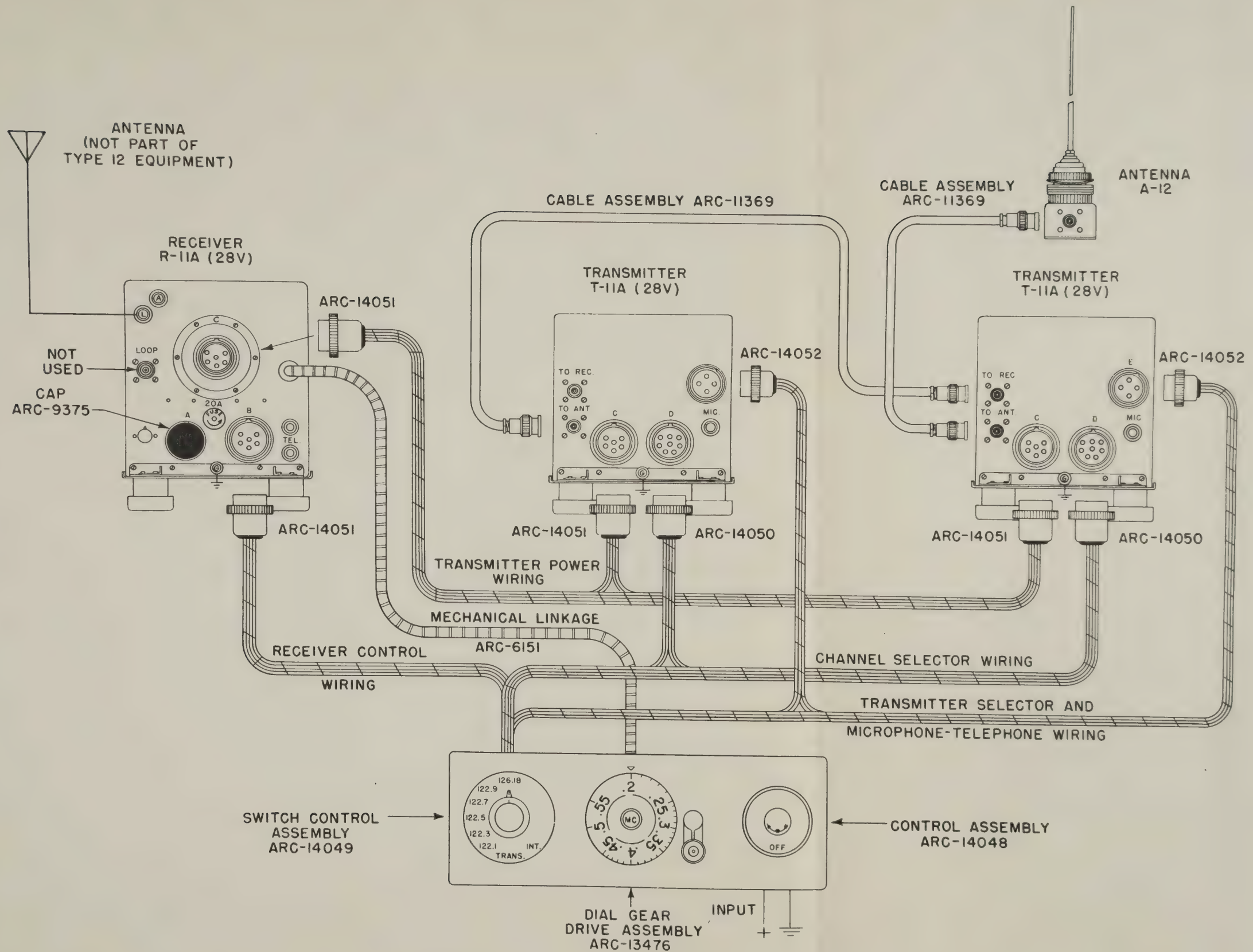


Figure 4-15. Radio Set ARC Type 12, Model H-13B, Helicopter Installation, Interconnection Diagram

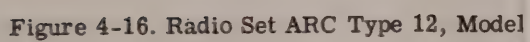


Figure 4-16. Radio Set ARC Type 12, Model

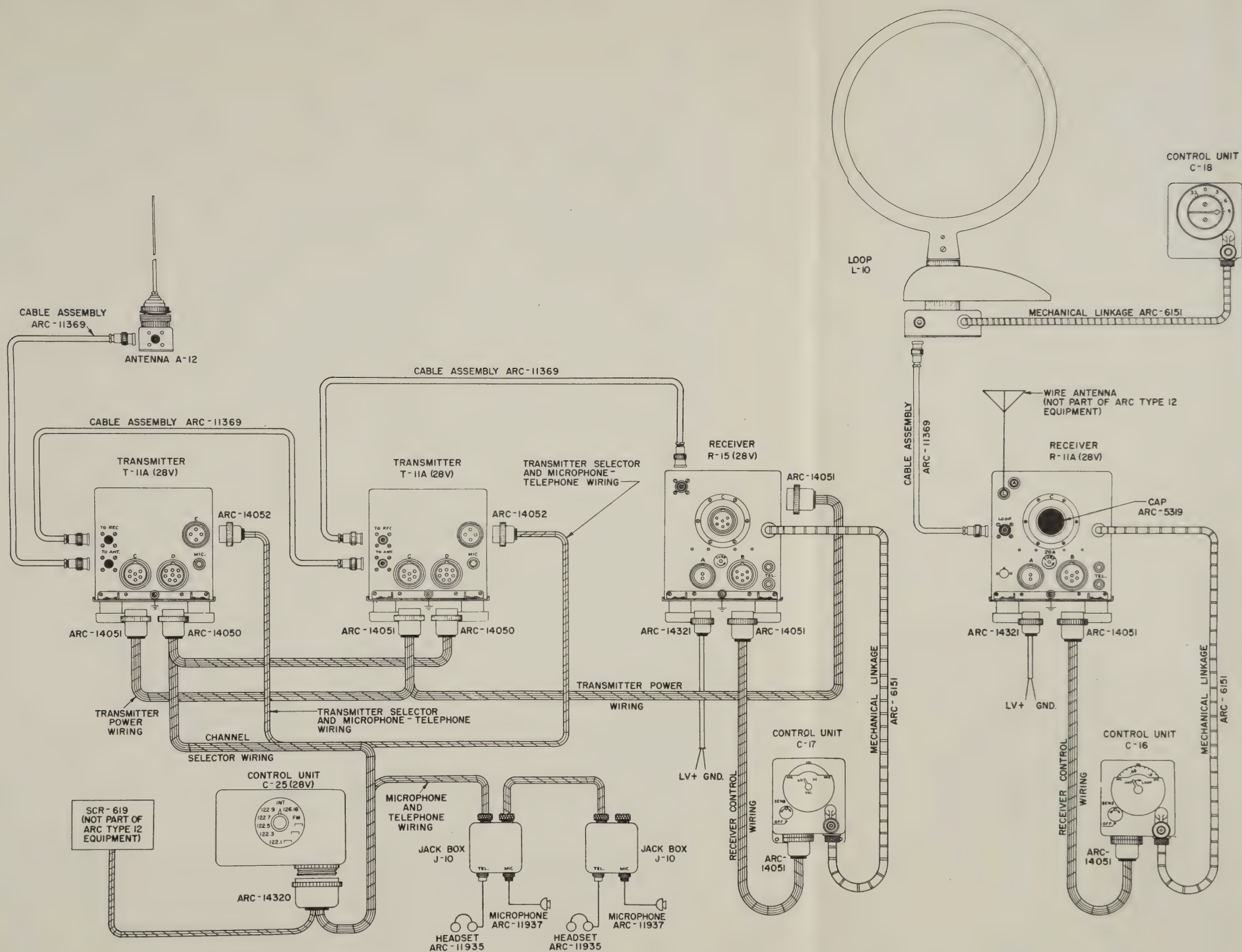


Figure 4-16. Radio Set ARC Type 12, Model L-15 Aircraft Installation, Interconnection Diagram

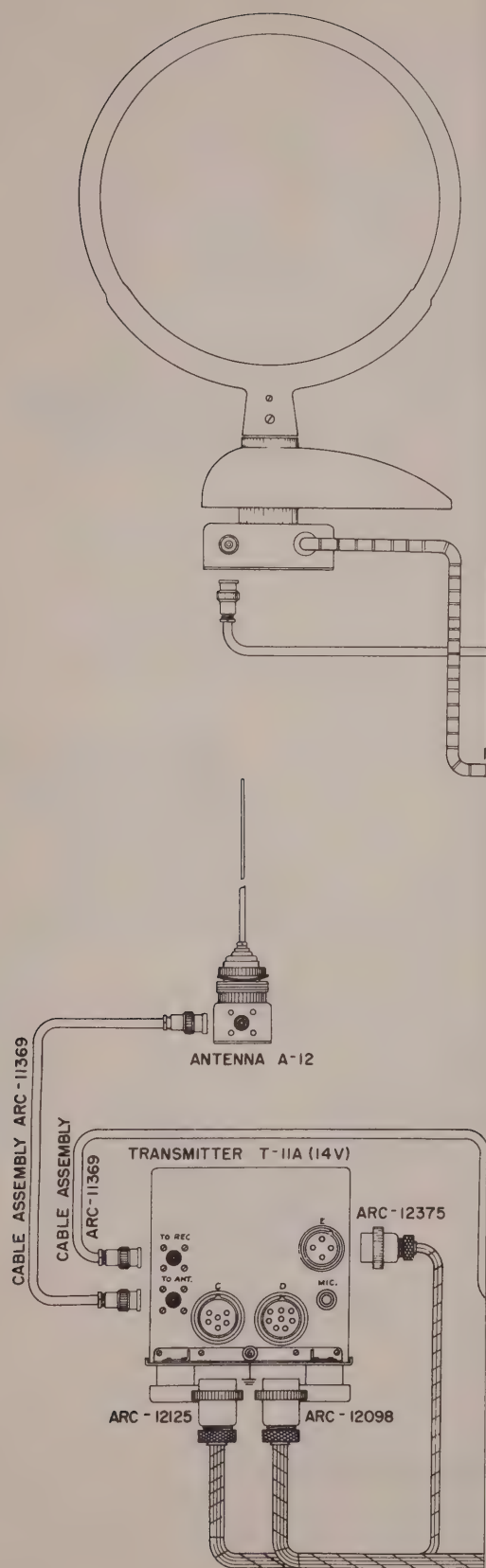


Figure 4-17. Radio Set ARC Type 12, Mo

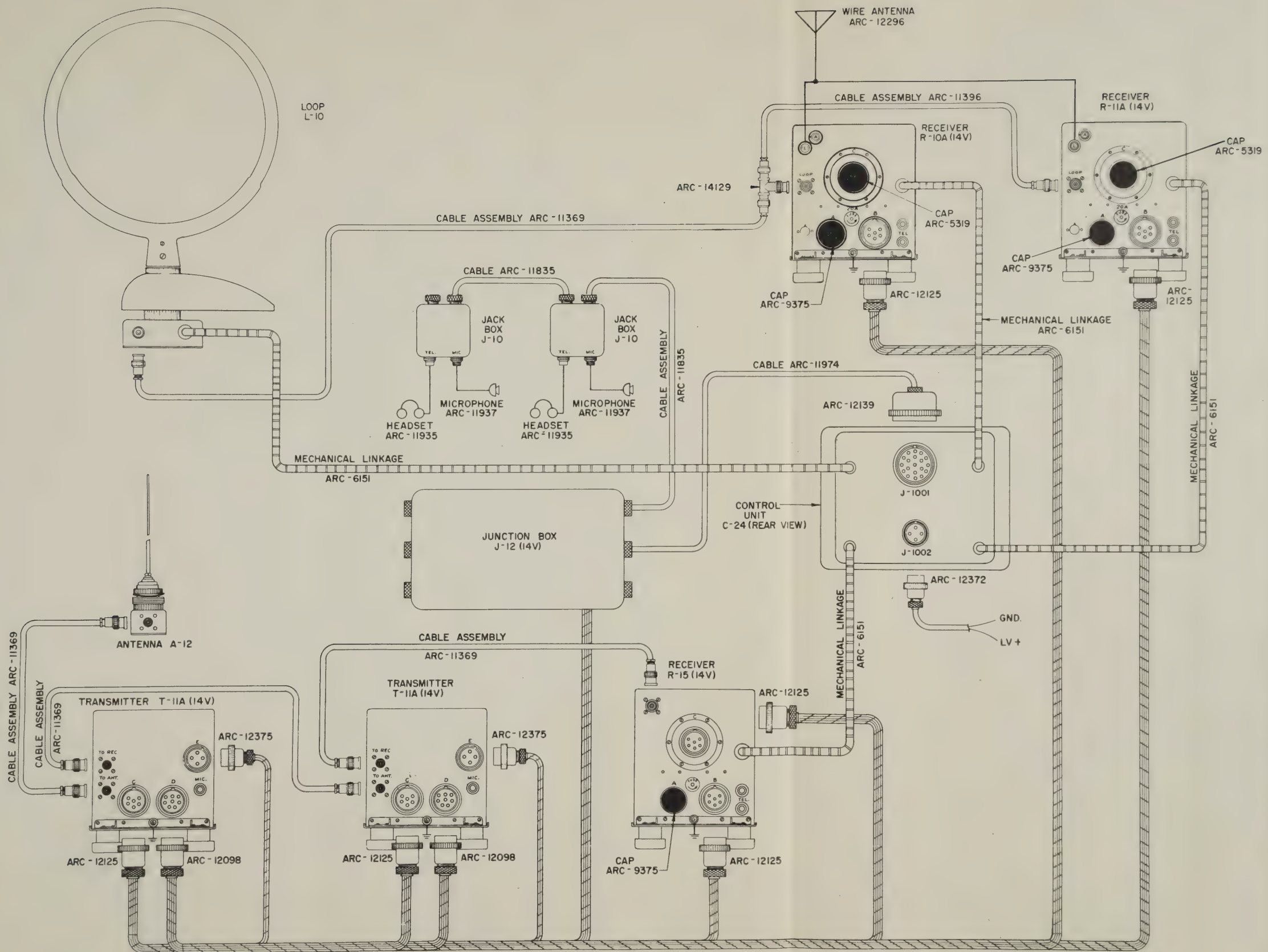


Figure 4-17. Radio Set ARC Type 12, Models L-17A, L-17B, L-17C Aircraft Installation, Interconnection Diagram

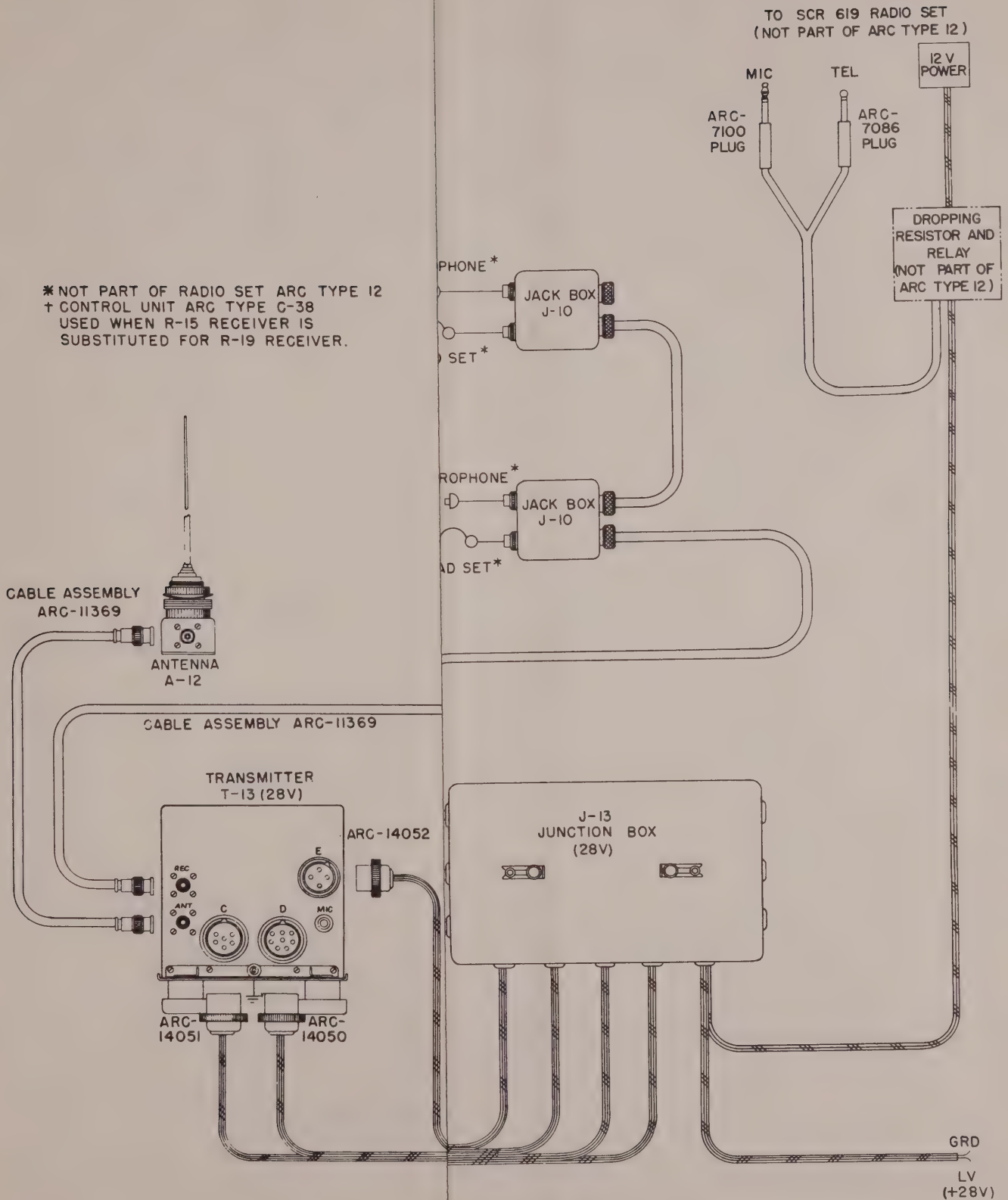


Figure 4-18. Radio Set ARC Type 12, Model C-38

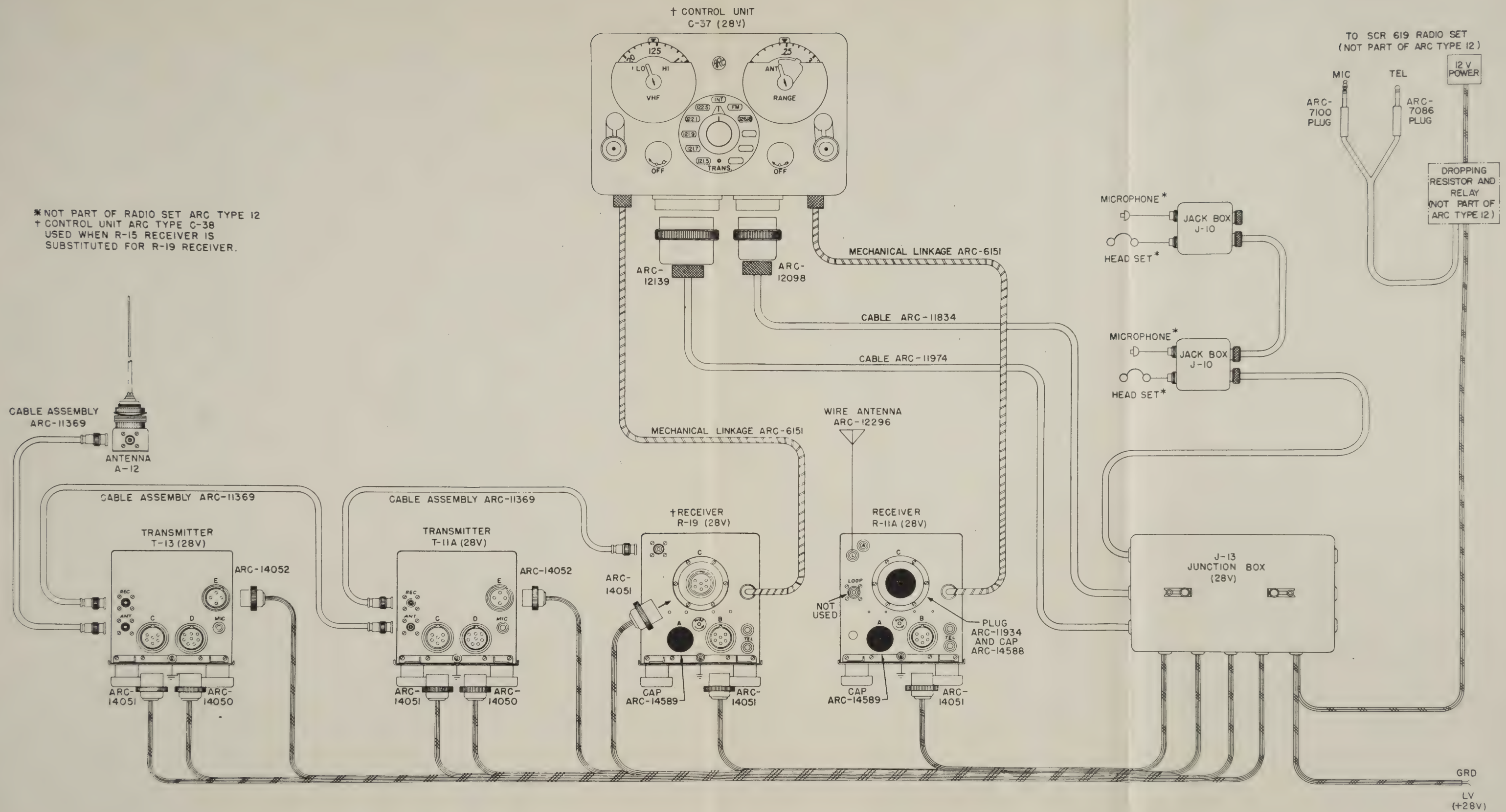


Figure 4-18. Radio Set ARC Type 12, Model L-19A Aircraft Installation, Interconnection Diagram

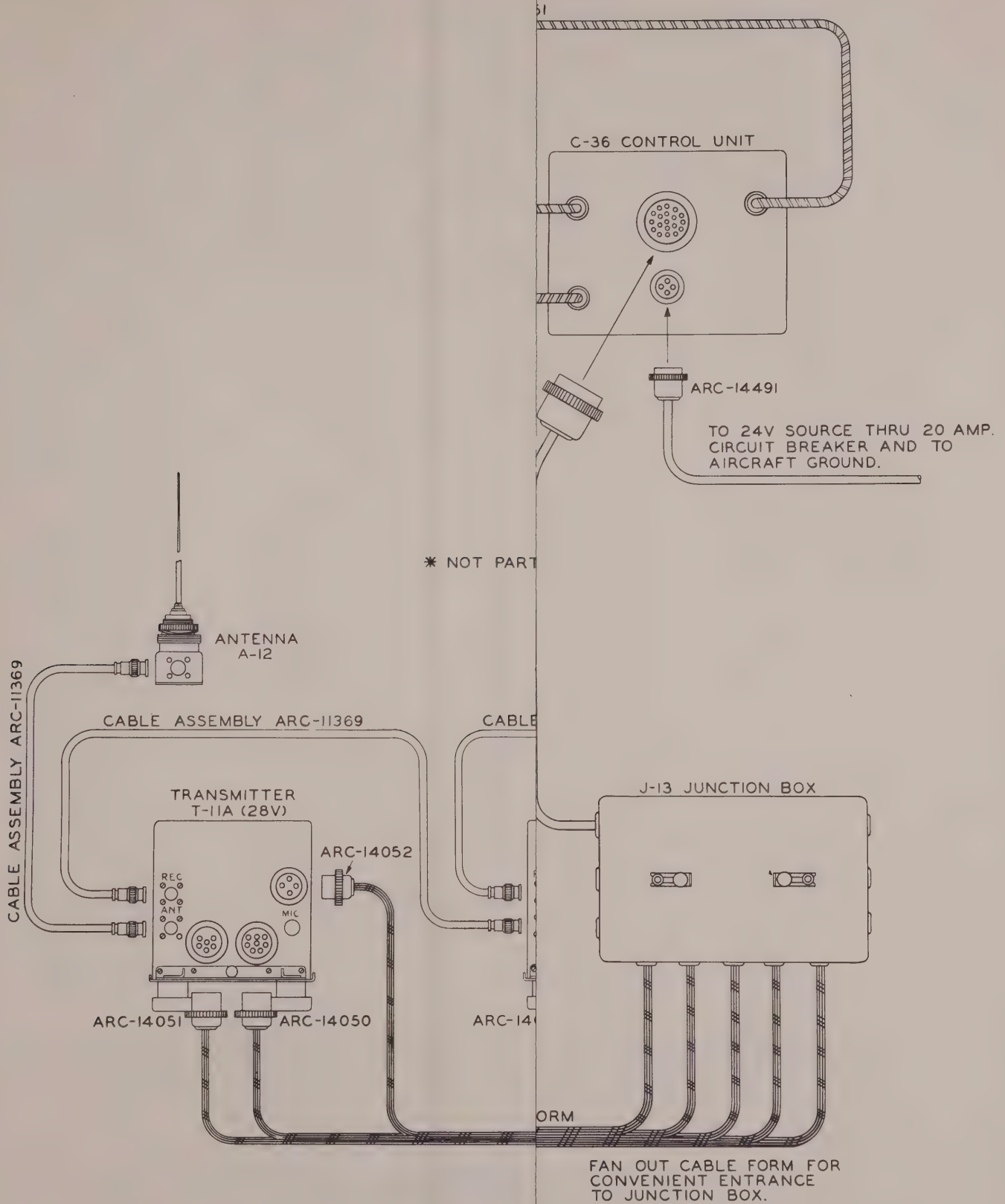


Figure 4-19. Radio Set ARC Type 12, Model YH-18 He

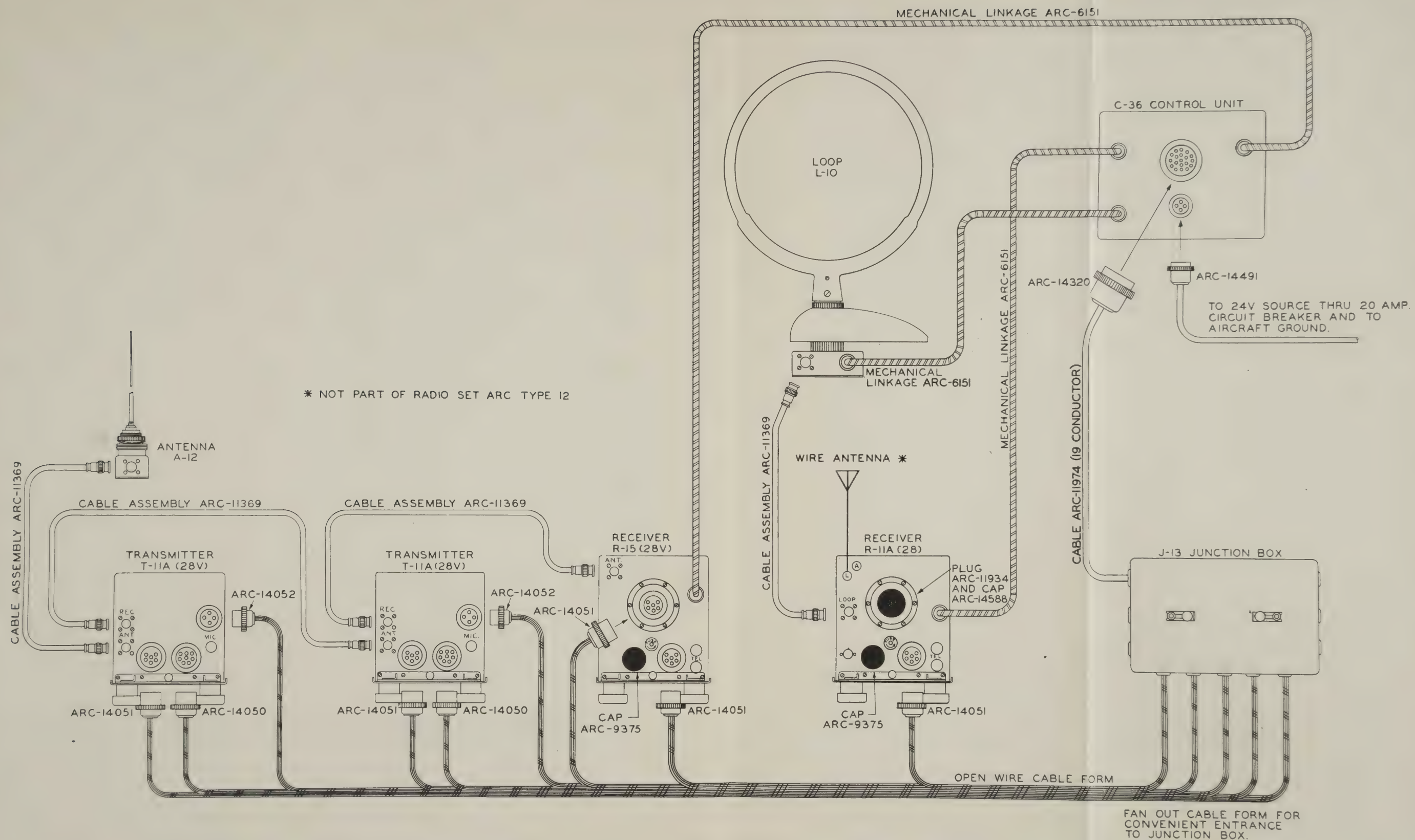


Figure 4-19. Radio Set ARC Type 12, Model YH-18 Helicopter Installation, Interconnection Diagram

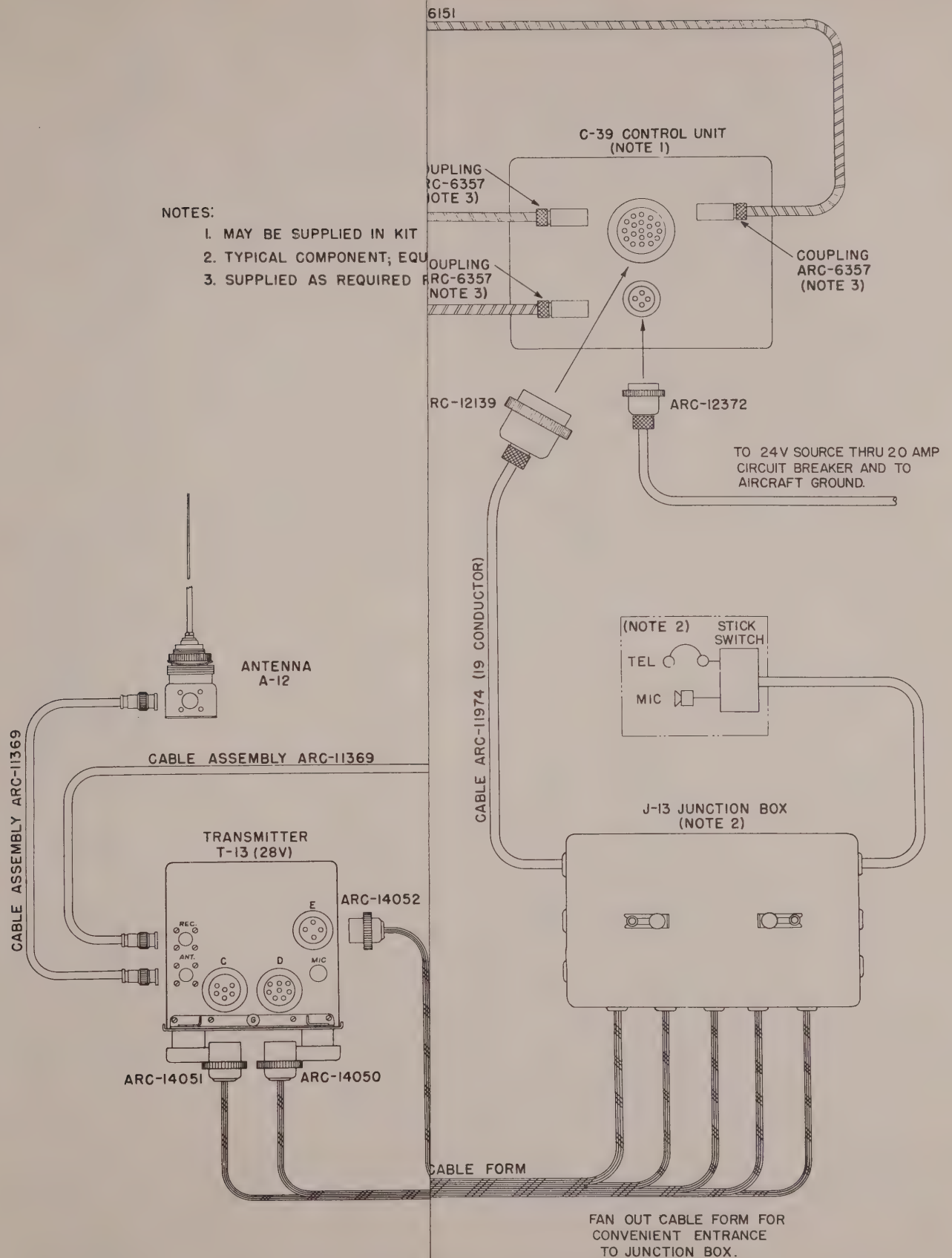


Figure 4-20. Radio Set ARC Type 12, Model

NOTES:

1. MAY BE SUPPLIED IN KIT FORM IN SOME INSTALLATIONS.
2. TYPICAL COMPONENT; EQUIVALENT MAY BE USED.
3. SUPPLIED AS REQUIRED FOR SPECIFIC AIRCRAFT INSTALLATION.

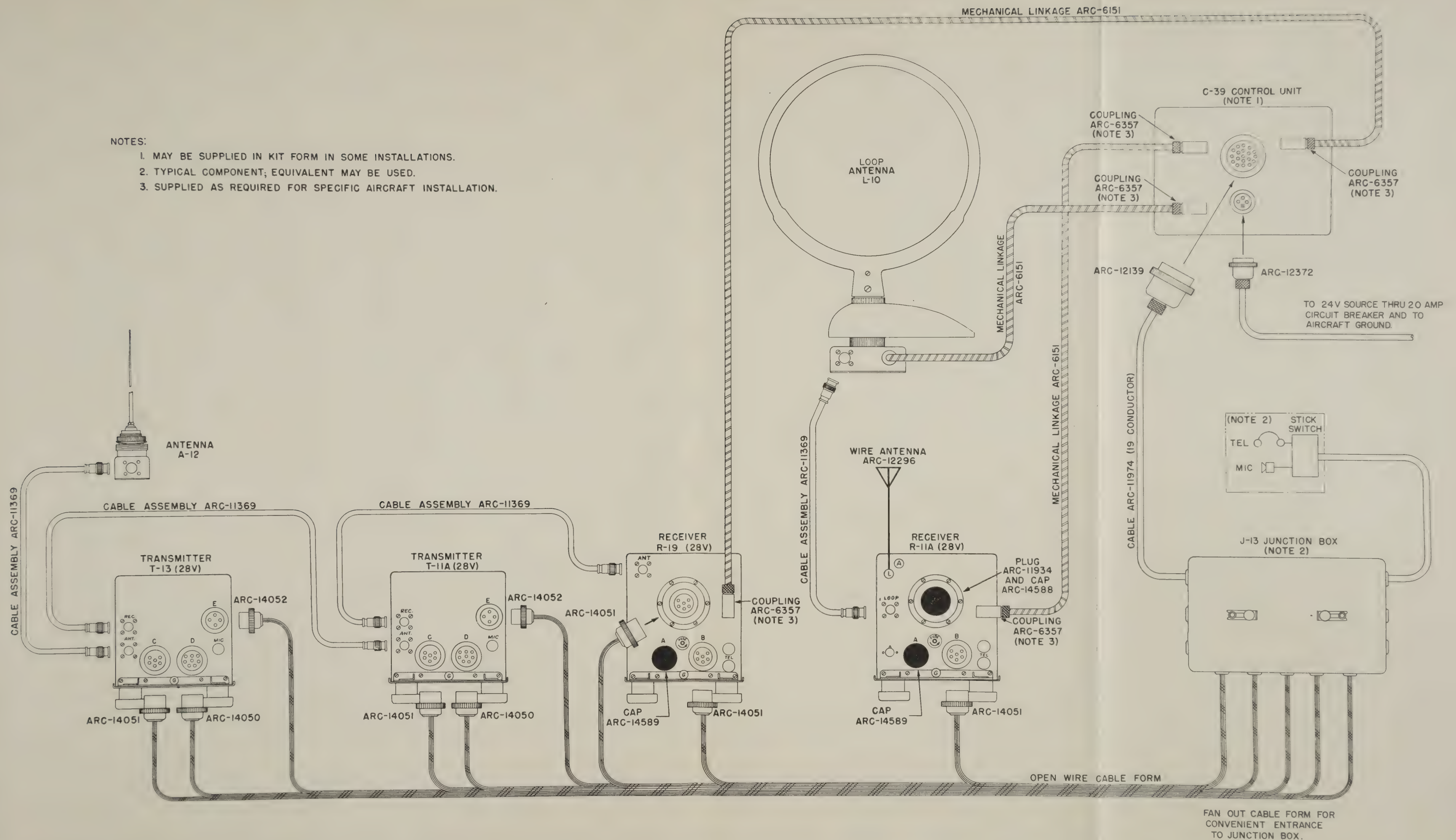


Figure 4-20. Radio Set ARC Type 12, Models HTE-1, HTL-4, and HTK-1 Installations, Typical Interconnection Diagram

MECHANICAL LINKAGE
ARC-6151
TO C-40
OR EQUIVALENT

ARC-
14051

RECEIVER
R-19 (28V)

Figure 4-21.

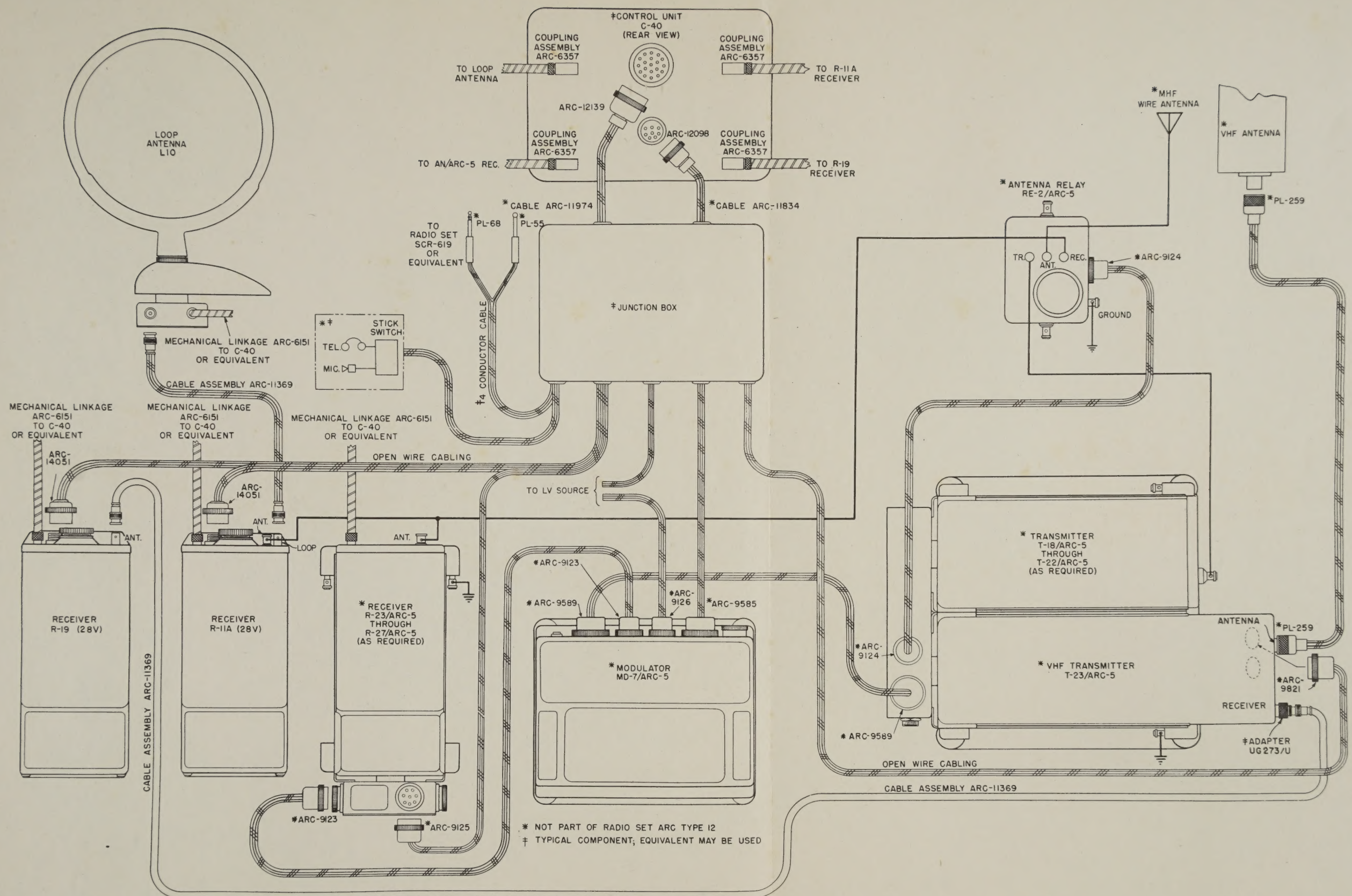


Figure 4-21. Radio Set ARC Type 12 and Model AN/ARC-5 Aircraft Equipment, Typical Aircraft Installation, Interconnection Diagram

